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The INDI sales team have been trained to take your order with the utmost care and efficiency. All stock offered for sale is held in stock, centrally at our group ware house complex and is available for next day delivery, direct to your home or business. If at any time we are out of stock your money will not be banked until the product is available (a point worth checking should you be tempted to purchase elsewhero)

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As part of our policy of continual product development and refinement, we reserve the right to change specifications of products advertised. Please confirm current specifications at the time of ordering.

Hi,
Some of you have no doubt heard my Radio 1 announcement that Im off to the good old USA at the end of January 1994. After months of negotiations with my Bosses at the BBC Ive landed the job of a lifetime as Radio I's official West Coast correspondent. Illl be reporting live and Direct from Los Angeles and San Francisco with the odd Trip to New York thrown in for good measure. And so although rlll be living most of the year stateside I'm still going to be very much part of the Radio 1 network, and best of all T'm definately going to keep you Indi customers updated with all the latest computer news as well as the up to the minute games releases in L.A. and the UK.
So as soon as Ive finished working on my suntan IIl be busy on the keyboard, reporting to everyone at Indi as usual. Keep watching this space.

$$
\begin{gathered}
\text { Best wis } \\
\text { J.B }
\end{gathered}
$$

## vabde frantbes



## New Award Winners Pacl

The superb New Award Winners Pack based aro the A600. Without a doubt this is the best value $p$ around complete with 4 great games.
Pack Contains:

* Amiga 600 Single Drive
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"Approx 1.5 times faster than an A4000/030 This is the ultimate power configuration, if your dream is to own the quickest $A / 200$ ever then take a look at this specification:
specificataion
Amiga 1200 * 4 Mb 32 - bit Fast RAM (Expandible to an
Amazing $128 \mathrm{Mb}!$ ) * Microbotics M1230 XA W/50MHZ MMU (Approx 1.5 times faster than an A4000/030!! * 12 Months "At Approx
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A600 EPIC PACK ( 40 Mb HI
PACK INCLUDES: A 600 Hard Disks ( 40 Mb ) - 1 Mb Memory

* Epic
- Rome
* Myth
* Trivial Pursuit
* Amiga Text
* Deluxe Paint III
* 12 Months at home servi
$£ 199.99$ 等 $£ 279$.

Amiga 1200 Microbotics Memory
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Do you want your Amiga 1200 to have more memory or to go faster by simply fitting a board into the external trapdoor? Microbotics have an extensive range of products with the immense benefit of 'Chipup' technology. Most boards have soldered chipsets which do not allow expansion beyond your initial purchase. Microbotics products allow you to add extra memory as your computing skills grow and new software arrives demanding even more memory.


| Memory Expmanslom Bourde |  |  | Aecslerator Bowrds |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Speed | 4Mb | 8 Mb | Speed | 4Mb | 8Mb |
| $\begin{aligned} & 14 \mathrm{Mhz} \\ & 25 \mathrm{Mhz} \\ & 50 \mathrm{Mhz} \end{aligned}$ | $\begin{aligned} & 6247.99 \\ & 6307.99 \\ & 6377.99 \end{aligned}$ | $\begin{aligned} & 6447.99 \\ & 6517.99 \\ & 6577.99 \end{aligned}$ | 40 Mhz 50 Mhz | $\begin{aligned} & \text { C365.99 } \\ & \text { C475.99 } \end{aligned}$ | $\begin{aligned} & \hline 6595.99 \\ & 6709.99 \end{aligned}$ |

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TAKE 2. Animation package is a must for computer artists and enthusiasts of all ages As used inRolf Harris Ca
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## SOFTWARETTTLAS

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617.49 616.99 ¢16.99 614.49

The NEW OPAL VISION system(Rev.2)

The amazing Opalvision 24 - bit graphics board and software suite has been updated no is now even betuer value for money.

Now includes full magic wand implementation and Alpha
Channel that allows photo compositing with selectable levels on a pixel by poxel ousis. The new Chrominance effect allows absolute, real time control of image conrast, brilliance and re - mapping of colours.

- ofering real time play back of animations created by ray Quite simoly it's Display OpalVision graphics anytime with key com

Disply OpalVision graphics anyyime with key combinations.
Quite simply, it's a spectocular product - Amiga Computing
Undoubtedy the finest, most professional paint program to arrive on the Amiga" -
Professiond
internationaly at this Price can't be tumed oway" - Amiga User
The verdit was unanimous - briliont" - Amiga Shopper

## MORPH PLUS

You've seen Michael Jackson's video, you've seen the television adverts using位 atest techniques in morphing, now now you can create the same results , technology. Whether you are a professional artist or just want to experiment at home Morph Plus is a must.

DELUXE PAINT IV AGA
Combines powerful tools with an intuitive interface so both professionals and beginners alike can get superb results quickly. New enhancements to the fortware include the ability to paint and animate in 4696 colours in the $\mathrm{Am} \mathrm{g}^{\prime}$ ' HAM (Hold and Modify)mode. New animation features also inctude minetamorphosis allowing you to change one image into

ART DEPARTMENT PROFESSIONAL
The ultimate in image processing providing many key benefits to Amiga users working with pictures. With ADPro you can read, write and convert between PEG image makes it possible to maintain an image library in full 24 . bit colour without needing massive hard drive storage. Typically a 600 Kb image can be compressed down to 40 Kb !!

## REAL 3D V2

Is a full featured 3D animation, modelling and rendering program. With Real 3D V2 you can produce high quality images and animations of three dimenpional models with an astounding level of realism. Imagine creating an animation that shows a handful of bails bounce down a flight of stairs to the bot-
tom. Gravity, collision, deflection and the elasticity of the balls are all automatically calculated by the program!

## VIDEO DIRECTOR

With Video Director, anyone with an Amiga, a camcorder and a VCR can Tuckly and easily catalogue and edit the best moments from their video lapes. Video Director is extremely easy to use, you can actually control your
camcorder and VCR from your Amiga screen. Video Director comes with everything you need to get started. The hardware to control your cameverything you need to get started. The hardware to control your cam-

AMIGA PROFESSIONAL PRODUCT:

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Amiga Logo - Educational and program-
ming anguage. DUAL SYNC MONITOR

## 1942 MONITOR

This new monitor has been specially 4000 computers in order for you to enioy their fantastic graphics to the full. The their fantastic graphics to the full. The speakers

## SHARP MONITOR / TV

The Superb Sharp 14" Monitor I TV provides a real alternative to a Commodore Monitor with full function remote control 39 channel electronic auto search tuning, digital on screen display and 1.5 watt mpo audio output, all you need to know is the Low, Low Indi Price. So, unless you need High resolution graphics look no further, you complete with connectivity cable and including 12 Months Warranty

## $98.7 \%$ of Indi Deliveries arrive next day <br> (Official Securicor Statistics)



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4MB SMARTCARD. Same as above but maximum 4 MB . INDI PRICE 6159.99


1084S MONITOI Commodores original an best selling colour stereo Bonitor. INCLUDE STAND. (E179.99 if purchased
with A600 / Al200 I with A600 / Al200 /
Al500)


ZAPPO ZAPPO
EXTERNALFLOPP You've seen all the reviews on this popula and affordable second Amiga drive.
Compatible with all Amigas.

Quality: 9 out of 10 . Exceptional value for
AMIGA COMPUTING JAN 93

NEW LOW PRICE IDE INTERNAL HARD DRIVES

Indi can now offer top quality $2.5^{\circ}$ Internal Hard Drives for the Amiga 600 and 1200 at unbeatable prices. All dri ves come complete with a cable and installation softwarc.
$80 \mathrm{Mb} \quad 2.5^{\prime \prime}$ Internal HD's 6179.99
$120 \mathrm{Mb} \quad 2.5^{\prime \prime}$ Internal HD's $\mathbb{E} 200.99$
$170 \mathrm{Mb} \quad 2.5^{\prime \prime}$ Internal HD's $£ 239.99$

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A great value pack for all Amiga 600 and 1200 owner ZAPSAC Rucksac and ZAPPO Multi-coloured TJoystick Mousemat*3 Great Games - International
$\underline{1} 29.99$
ZAPPO 601
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As above only 512 K , no clock INDI PRICE C29.99


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## Panasonic Quiet ${ }_{\text {Priniting }}^{\text {Colour }}$

We researched the colour printer market at great depth to find a colour printer good enough to cope with Amiga's powerful output, yet at an affordable price
We found the perfect printer in the and KX - P2123 quiet printer. We then considered that if you were going to buy a Panasonic printer you would prob printer purchase! So together with Panasonic we decided to give a copy of 'Wordworth' free with every retail price of $f 129.99$ we thought that might be a little too expensive on top of your prite ack or maybe the idea of word processing isn't for you. Once again Indi have the

Panasonic printer. Of course your might be the fortunate owner of a desktop
solution with the alternative of two great games. How's that for added value?

## Panasonic KX - P2I23

 The new high performance Panasonic KX
P212324 pin. Quiet colour printer offers leading edge quiet printing technology at an affordable price * Fast Printing Speeds 192 CPS draft, 64 CPS LQ and $\mathbf{C o u}$ Printing Colour Printing 7 colour palette (blue. red, green, yellow, violet, magenta, black)
$*$ Ouiet Printing Super quiet $43.5-46 \mathrm{dBa}$ * Quiet Printing level (most matrix printers are typically in excess of 60 dBa ) \% 7 Resident Fonts Over 152.000 type styles using Super LQ, Courier Prestige, Bold PS, Roman, Script, and Sans Serif Fonts. - 24 PIN Diamond Printhead High *erformance and high quality output mind.

## NRDD <br> WORd Procissing Option

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WITH PANASONIC QUIET PRINTERS. The writers choice. The ultimate word processor for AMIGA for the full range of AMIGA computers. The graphical nature of WORD WORTH makes producing documents faster and easier, with the enhanced printing fonts (including fult Panasonicessor P2 123 colour printing support), Collins spell checker and thesaurus, no orher word proces Today" (Amiga Format)NORMAL RRP $£ 129.99$ inc. VAT

## GNE SAROPTION

## Frontier Elite II

You may choose from many different roles from explorer to assassin, from stockbroker to trader. Battle with pirates across a galaxy of different worlds, trade or smuggle goods or become a pirate yourself. The goals to aim for are endless, the game is completely open ended.
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The ultimate in space adventure rontier is the important step for ward for games this decade . $97 \%$


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A massive 7 disk program, from the first film simulation vastly different to the console version with vivid scenes straight from the hit movie. Batman has returned in style.
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## Panasonic LASER PRINTER

## KX - P4410 LASER PRINTER

## KX - P4430 LASER PRINTER


 WORDWORTH AGA COMPLETEY
FPEPMTH PANASONIC LASER PRINTERS The writers choice. The ultimate word processor for AMIGA computers ORMAL RRP $C 129.99$ inc VAT

mane o ofery you tie power to meet your requirementr:
$K \times P=4410$ * 5 pages per minute *. 28 resident fonts


Low running costs 4. Parallel interface *. Optional memory expansion to 4.5 Mb ( 0.5 as standard) * HP laserjet II Emulation

WORDWORTHAGACOMPETEYFREE WITHLASERPRINTERS

Panasonic


KXP-4430 * Satinprint (optimum esolution technology *) 5 Pages per minute * HP Laseriet III Emulation, PCL 5 * 8 Scalable fonts $\& 28$ bitmap functions

* Optional 2nd input bin (total print er capacity $2 \times 200$ sheets
* Optional memory expansion to 5.0 Mb (1 Mb as standard)



Ł649.99 "Sadigrinters use optmum resolution technoligy potware technique smopetis away uradition by vared efres on curved ch WORDWORTHACACOMPLETE Y FREE

## Panasonic PRINTER ACCESSORIES



1) PANASONIC AUTOMATIC SHEET FEEDER Automatic sheet feeder for KX
sheets. INDI PRICE $£ 89.99$
2) PRINT DUST COVER
3) PRINT OUS COVER KXP $2 / 23$ printer. INDI PRICE 68.99
4) PRINTER STAND

2 piece printer stand. $\operatorname{INDI}$ PRICE $£ 9.99$
4) PAPER PACK
560 shees qualicy A4 paper. INDI PRICE $\mathbf{6 9 . 9 9}$
5) CONTINUOUS PAPER

2000 sheets I part listing paper. INDI PRICE $£ 19.99$
6) PARALLEL PRINTER CABLE

To be used when connecting Amigg to Panasonic printers.
INDI PRICE 68.99 ( $\mathbf{5} .99$ it purdised wich a priver)
7) PANASONIC COLOUR RIBBON

Colour ribbon for KXP $2180 / \mathrm{KXP} 2123$.
8) PANASONIC BLACK RIBBON

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Contains 6 colour ribbons for the KXP 2123 RRP
fl19.99.
NDI PRICE $£ 89.99$ SAVE $£ 30!!$
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PANASONIC DELUXE ACCESSORY PACK Contains automatic sheet feeder, 2 black ribbons. 2 colour ribbons, I dust cover, 2 piece printer stand. RRP $£ 169.99$ INDI PRICE $£ 139.99$ SAVE $£ 30$

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E 64.00
1 Mb 32bit RAM
E153.00

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40 MHz 68882 fPU
$\begin{array}{lr}\text { OMb / NO FPU } & £ 269.00 \\ 4 \mathrm{Mb} \text { RAM } 40 \mathrm{MHz} \text { FPU } & £ 439.00\end{array}$
4Mo fam 40 MHz fpu
$\begin{array}{ll}\text { OMb / NO FPU } & £ 179.00 \\ 4 \mathrm{Mb} \text { RAM } 33 \mathrm{MHz} \mathrm{FPU} & £ 349.00 \\ \text { SCSI CABLG KIT } & £ 59.00\end{array}$
$\begin{array}{ll}\text { OMb / NO FPU } & £ 179.00 \\ 4 \mathrm{Mb} \text { RAM } 33 \mathrm{MHz} \mathrm{FPU} & £ 349.00 \\ \text { SCSI CABLG KIT } & £ 59.00\end{array}$
$\begin{array}{ll}\text { OMb / NO FPU } & £ 179.00 \\ 4 \mathrm{Mb} \text { RAM } 33 \mathrm{MHz} \mathrm{FPU} & £ 349.00 \\ \text { SCSI CABLG KIT } & £ 59.00\end{array}$
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## GVP A 1230 BORAD

Another quality tropdoor expansion for the A1200. It features a 68030 processor as standard and has slots for a maths co-pro and up to 8 Mb of 32bit RAM.

## gVp accessorics

## OVERDRIVE 35

These external hard drives come in an ABS box styled to match the Amiga A1200. They plug in via the PCMCIA slot and include an external PSU so as not invalidate your Commodore worranty. Ultra fost ransfer rates of up to $2 \mathrm{Mb} / \mathrm{sec}$. Full 1 year woronty, all the software needed to mount and sonfigure the drive is included.
$\begin{array}{ll}130 \mathrm{Mb} \text { version }-£ 299 & 340 \mathrm{Mb} \text { version }-£ 449 \\ 200 \mathrm{Mb} \text { version }-£ 349 & 426 \mathrm{Mb} \text { version }-£ 549 \\ 250 \mathrm{Mb} \text { version }-£ 399 & 540 \mathrm{Mb} \text { version }-£ 699\end{array}$

## 月1200 UPGAADGS

## gVP SCSI/RAM BOARD

This boord is user fittable via the trapdoor expansion slot of the A1200. It has slots for up to 8 Mb of 32bit RAM, a maths co-pro and includes a SCSI interface as standard.

## DKB RAM BOARD



## IDE INTERNAL HARD DAIVE KITS

These kits come complete with screws, instructions and all the software necessary to prep and configure the drive.

$$
\begin{array}{rll}
40 \mathrm{Mb}-£ 139 & 60 \mathrm{Mb}-£ 119 & 80 \mathrm{Mb}-£ 179 \\
120 \mathrm{Mb}-£ 279 & 209 \mathrm{Mb}-£ 399 &
\end{array}
$$

## A4000 UPGRADES

## PHOTON (FOR R4000/030)

This boord wil transform an Amiga A4000/030 into a fully fledged 040. It features a 040 CPU module with a MMU and a built-in FPU running at 25 MHz . PHOTON UPGRADE $£ 699$

## HeLIfIBe (FOR A4000/030)

This is a replacement CPU board for the A $4000 / 030$. It features a 50 MHz clock speed, a built in MMU and a 50 MHz 68882 FPU . Your 030 will only be $10 \%$ slower than an 040 during most operations.
HELLFIRE UPGRADE $£ 299$

## DKB 128

The DKB 128 is a 0 wait state memory expansion board for the A4000 series. It has slots for up to 128 Mb of 32 bit RAM using SIMMS of any size. It is a true ZORRO 3 card which makes for a very fost board.
DKB BOARD (BLANK) $£ 269$ (See chips for memory)
habD Daives ( 1200 \& 月4000)
These Hard Drives can be fitted at any time bu us (FOR THE A1200) or the end-user. All the necessary software is included.

| $85 \mathrm{Mb}-£ 129.00$ | $330 \mathrm{Mb}-£ 299.00$ |
| :--- | :--- |
| $130 \mathrm{Mb}-£ 149.00$ | $426 \mathrm{Mb}-£ 369.00$ |
| $200 \mathrm{Mb}-£ 199.00$ | $540 \mathrm{Mb}-£ 399.00$ |
| $250 \mathrm{Mb}-£ 249.00$ |  |
| FITTING FEG FOR A1200 | $£ 29.00$ |
| CHIPS |  |


| 1 Mb SIMM | $£ 39.00$ |
| :--- | ---: |
| 4 Mb SIMM | $£ 134.00$ |
| 25 MHz 68882 FPU | $£ 89.00$ |
| $33 \mathrm{MHz} 68882 \mathrm{FPU}+$ CRYSTAL | $£ 99.00$ |
| $40 \mathrm{MHz} 68882 \mathrm{FPU}+$ CRUSTAL | $£ 129.00$ |

## CD32 CONSOLE

This machine represents the future in home entertainment and video game play. A self-contained CD console which you can expand into a full CD based home computer. CD32 comes complete with two stunning AGA games.

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## contentis

Nine pages for enquiring

## minds

The most authoritative monthly columns in the business, covering all areas of specialised Amiga activity

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Are you facing some stickys string problems? If so cbeck out Alex Gain's character-building column as be ties up the loose ends

Video
Adam Pbillips adds time management to the videographic equation in the thind part of bis essential tideograpbic master class

## Music

If you're ready to take your first tentative steps into the world of Amiga music, Paul Austin provides the definitive guide to softuare

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## Floppy round-up

48Spoilt for choice? Let the experts take the strain out of shopping


## Amiga Computing awards



Find out who won the ultimate accolade from you the readers

## Paint round-up

Thinking about an artistic investment? Look no further...

## Database round-up

Bing alite ordect oan ingene word wift his statistians stopping bist

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Has the ultimate word processor arrived at last?

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Top quality TV graphics from over the pond

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## Lightwave

As promised $A C$ delivers the definitive review of the ultimate ray tracer


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Amiga Market
Consumers' corner gets into full swing once again with yet more software, hardware and sound advice

Shop Window

- Cam-Link video editor
- Noddy's big adventure
- Vidi Amiga 12 RT


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## The cov／＝RBISKS

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## 1 



Silsoe Village Scene by Gordon Chambers, typeset by Leaside Graphics, Luton.

## Languages

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AmigaBASIC compatible compiler
HiSoft Deupac Ver 3 - latest
f 55
$680 \times 0$ assembler/debugger
HighSpeed Pascal - a complete
£70
Turbo Pascal 5 compatible
compiler/editor system
TurboText - programmer's editor
E 50

It's that time of year again, frosty mornings, roaring log fires, red noses ... and all those presents to buy.

We know how difficult Christmas buying decisions can be so, to make life just a little easier, we've come up with some splendid gifts for the Amiga lover in your household, at bargain prices.

From programming languages to real-time video digitisers, we have something that should appeal to any discerning Amiga enthusiast who wants to get the most out his Amiga computer during the festive season.

To take advantage of these bargain buys just call us on 0525718181 , armed with your credit/debit card details, or write to us enclosing a cheque or postal order. We will despatch goods within 5 working days or, for an extra $£ 5$ postage, the same day on a 24 hour delivery, right up to Christmas. Please quote reference AMX938 when ordering.

## Books

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Mastering AmigaDOS 3 A-Z £18 Reference
Mastering Amiga Printers £16
Mastering Amiga AMOS £16
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K-Spread 2 / K-Data Pack
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- combined spreadsheet,
database package
Personal Finance Manager Plus $£ 15$
- integrated home accounts

SBase 4 Personal - superb
$£ 99$
relational database
SBase 4 Professional - the best
8199

## Music/Video

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stereo direct-to-disk sampler VideoMaster AGA/RGB - new $£ 99$ A600/A1200 real-time video \& colour image capture package Clarity 16 - high-quality, 16 -bit stereo sound sampler AudioMaster 4 - sample editor £50
ProMIDI Interface
£20

## 

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## N E WV S

## свм operating

 costs slashedCOMMODORE have substantially slashed their operating costs, but continue to lose money - $\$ 356$ million in financial year 1993 and $\$ 9.7$ million in the first quarter of the current financial year.
A statement at the end of last year's report says the firm's financial position and operating results raise substantial doubts about their ability to continue as a going concern.

Another says the company were trying to work out new credit terms with suppliers that had restricted credit but there was no assurance such arrangements could be made.

The loss was blamed on intensely competitive pricing pressure and economic softness in all their major markets, inventory write-downs, restructuring costs and discontinuation of the PC line.

The shortfall wiped out shareholders' equity, which slumped from $\$ 325$ million on June 30,1992 to a deficit of $\$ 53.2$ million on June 30, 1993.

Details of the firm's first quarter 1994 results were given with the 1993 figures. They showed that during the three months ending September 30, Commodore lost a

further $\$ 9.7$ million. This was down from $\$ 18.8$ million in the corresponding period in 1992, as were sales from $\$ 158.6$ million in 1992 to $\$ 82.6$ million.

Recently the company have been cutting their costs around the world, with several European offices now closed and their after sales support controlled from Germany.

The benefits of these savings are now starting to be seen, with the operating expenses being slashed in the first
quarter to $\$ 13.7$ million from $\$ 39.5$ million in the same period during 1993.
The first quarter loss gave Commodore a negative equity of $\$ 61.2$ million, and no updates were given to their end of year footnotes.
"Clearly the financial performance for the fiscal year was extremely unsatisfactory," said Commodore chairman Irving Gould.
"The company have addressed their current financial difficulties by restructuring their business in a number of ways including eliminating unprofitable product lines.
"These actions have resulted in improved operating performance enabling substantial narrowing of the operating loss for the quarter ended September 30, 1993."
In Britain Commodore's joint managing director Colin Proudfoot said that although the company are in a weak financial position they will continue spending on the Amiga's future.
"It is essential to keep the product range up to date and development is continuing as a priority," he said.
Proudfoot added that the firm are confident that the success of CD32 will give the firm a second quarter profit.

## Amiga-bashing video dropped

ACORN have voluntarily dropped an Amiga-bashing Archimedes home computer video promotion after Commodore instigated legal action to prevent its distribution.

The tape was produced by the Cambridge-based manufacturer and was billed as a beginner's guide to using home computers in the office and classroom.

The Home Computer Minefield had been available through reply coupons and telephone numbers advertised in national newspapers.

Commodore had earlier obtained a temporary High Court injunction stopping further copies being sent out, and now intend to take the case to trial unless there is an out of court settlement.

Sources close to the firm say that although the video has been withdrawn,
the company will seek costs to cover management time spent dealing with the dispute.

They argue the tape gave a misleading impression of the Amiga, and claim it was made merely used as a means of knocking the performance of six competitor machines.

The firm say it implied their computers are only suitable for games and cannot handle more serious applications as shown in the video.

In court they produced a long list taken from a current computer magazine showing graphics, education, desktop publishing and accounts software for the A1200.

Acorn were unavailable for comment at press time but we understand a replacement video is due from the firm within the next few weeks.


Archimedes: Acorn video dropped after CBM object

## Buyers' new bundle of fun

A BUNDLE containing four awardwinning games from the past year will soon be offered to people buying Amigas from independent computer dealers. The Chaos pack has been put together by trade distributor SDL and contains the titles Chaos Engine, Syndicate, Nick Faldo's Golf and Pinball Fantasies.

Most dealers buying stock from SDL are expected to give their customers the pack with machines bought at the computer's recommended retail price. "We have created a pack that dealers can offer their customers with Amigas," said SDL spokesman Andy Leaning.
"It features the four best games of 1993 and is undoubtedly the best Amiga games pack so far."

## Tell Our Art Department To Work Weekends



You have a deadline coming up, and the pressure is really on. So relax. Go on a picnic. Art Department Professional (ADPro) is working the weekend.

ADPro's comprehensive ARexx interface allows you to convert formats, animate, image process, grab video, record on film and more, even while you're not there.

Being able to work straight through the weekend (as well as the other 120 hours in the week) means that projects can be done on time,

which otherwise couldn't be done at all.

Every aspect of ADPro, including its advanced image processing features, ability to read and write many image file formats, and control different types of color input and output devices, can be accessed from easy-to-write ARexx programs.

Get Art Department Professional.
It works weekends, so you don't have to.

## News Briefs

## Subscription changes

THE publisher of the Amiga enthusiasts' newsletter Access Amiga say that cheques for subscriptions and memberships should now be made payable to Weekend Developments Limited.

Rates for subscription are: One issue $£ 1.75$, six issues $£ 10.50$ and 12 issues £19. Orders should be sent to the firm at PO Box 208, Folkestone CT19 5EZ.

## Photo images

PHOTO-realistic images of landscapes and sunsets are now available as 32,256 and Ham8 images for use with Amigas.
Each volume contains three or four disks and costs $£ 6.95$ from Weekend Developments at PO Box 208, Folkestone CT19 5EZ.

## Finding space

A SOLUTION to the problem of insufficient disk storage space is Disk Expander, a new package which as its name suggest aims to double the capacity of floppy and hard disks.
Bedford-based Power Computing (0234 843388) have been given the rights for its worldwide distribution, and will be selling the software for $£ 29.95$.

## Repairs at home

RETAIL distributor ZCL have joined forces with ICL to give a year's home warranty for A600 and A1200 owners with internal hard disk drives.

The service will be offered through independent dealers, Calculus Stores and Indi and will solve the problem of hard drive upgrades invalidating Commodore's warranty.
ICL will add free of charge a further year's home warranty to any existing warranty that the Amiga 600 or A1200 might have.

## Dot matrix prices cut

PRINTER giant Epson have cut the price on 11 of their dot matrix models by up to 16 per cent in a bid to increase the firm's sales lead in the 9 and 24 -pin market.


ImageFX:
Extra image Extra image
manipulation and creation features

## More effects in ImageFX

GRAPHICS package ImageFX has just been improved to give Amiga owners a range of new image creation and manipulation features.
The Great Valley Products' software features drawing and painting in real time, and loader and saver modules allowing it to save and load files from a selection of other applications.
Several special effects are possible and it gives direct control of scanners, frame grabbers and 24 -bit boards. GVP's CineMorph is included to give morphing ability.
New in v1.5 is MAGIC, a system that allows applications to share images in memory to reduce memory overhead when multitasking several graphics programs.

The program gives faster operation, especially in virtual memory handling, and there are preview displays in a range of resolutions.
A macro system automatically creates ARexx scripts from macro recording, eliminating the need for programming ARexx scripts for batch operations.

It is supplied in Britain by Silica Systems (081-309 1111). Existing users can upgrade for $£ 29.95$ and the cost for newcomers is $£ 199$

## Brit firm in ProDAD Iink

PRODAD software, upgrades and technical support are now available in Britain from computer consultancy firm BVCC (081-567 4623).

The London-based company will sell Amiga software including Digital and video effects program Adorage 2, and the new animation processing package clariSSA.
clariSSA will enable users to create animations in ANIM5 format or as SSA from single frames rendered by software such as Imagine.

Once converted to SSA format, the firm claim animations can be manipulated in several ways, made more colourful and run about 1.5 times faster than ANIM5 sequences.

BVCC boss Ben Vost told Amiga Computing that ProDAD asked his company to distribute the software because he had become familiar with the packages when writing their manuals.

Adorage 2 and clariSSA cost $£ 79.95$ each.

## Going faster with A1200

EXTRA speed is now available to A1200 owners with the aid of Great Valley Products' new A1230-II.
The trapdoor expansion fits into the computer giving a 50 MHz 68030 processor with memory management unit, up to 32 Mb of memory and an optional maths co-processor.

A DMA Peripheral Port (DPP) allows data to be transferred between plug-in devices and the memory of the computer without processor intervention, resulting in faster operation.
The DPP will enable users to plug in further expansion card and three such upgrades will be launched by GVP soon for owners of the A1230-II.

## UMATCHED

The first will be the A1291 SCSI Kit Performance II, which the American developer claims will give "unmatched SCSI performance".

The hardware module and SCSI device driver can achieve transfer rates of 4.2 Mb per second, and uses the latest in SCSI termination technology Active Termination.
This is claimed to avoid the traditional hassles of SCSI termination and resistor packs. Other products will allow the Amiga to perform 16 -bit direct to disk sound sampling and real-time video frame grabbing.
"The A1230-II is the ideal Amiga 1200 upgrade for users wanting the best performance or expandability," said Silica spokesman Andy Leaning.
"In a single card, the A1230-II allows users to boost the power of their A1200 while also allowing them to expand their system with a range of unique upgrades."

Supplied without memory, the board costs $£ 379$ from Silica Systems (081309 1111).

## Scalable fonts from Seikosha's

SEIKOSHA'S latest colour 24 -pin dot matrix printer is claimed to print scalable fonts with variable heights and precise graphic output.

The SL96 has a maximum resolution of $360 \times 360$ dots per inch and a speed of 240 characters per second in Draft mode. The letter quality print speed is 84 cps . It contains eight bitmap fonts and two scalable fonts which can be printed at between 8 and 32 point, and has a 42 k memory.

Single sheets and fan fold paper can be used for output and a paper tray can be fitted to give automatic single-sheet feeding. An optional sheet feeder is also available.

Epson emulation is included and buyers can request an optional Amiga driver. The SL96 Colour has a recommended retail price of £292 and colour ribbons can be bought for E11. Its one-year return to base warranty can be upgraded to a year's on-site warranty for $£ 11$.

## Weekend comims prices slashed

MODEM users are set to benefit from cheaper telephone calls just announced by BT.

A three-minute call to anywhere in the country outside the caller's local area will cost 10p at anytime during weekends, and the firm have promised more cost-cutting is on the way.

Within the next year the telecoms giant will launch a scheme to allow customers to nominate regularly called numbers for which they will get automatic discount on calls made.

And there will be improvements to Option

15 which gives residential customers a discount of up to ten per cent on all their calls in return for an up front quarterly charge of $£ 4$
"A year ago we launched the first of our special offers - the Sunday Special - and followed that with a series of offers on international and local calls," said BT boss Michael Hepher.
"Since then we've listened to what our customers have been telling us and they like special offers that cut the cost of calls, particularly at weekends."


Comms: BT price cuts bring weekend gains

## Diary dates

January 12-15, 1994
BETT '94
Venue: National Hall, Olympia
Organiser: EMAP
(071-404 4844)
Britain's leading IT exhibition for the education market.

## April 10-12, 1994

European Computer Trade Show
Venue: Business Design Centre, London
Organiser: Blenheim On-line
(081-742 2828)
Europe's largest trade show for the computer and video games industry.

September 20-25, 1994
Live '94
Venue: Earls Court
Organiser: News International

## (071-782 6893)

Commodore have already pledged their support for this large consumer electronics show.

## October 26-30, 1994

Future Entertainment Show
Venue: Earls Court II
Organiser: Future Exhibitions

## (0225 442244)

The biggest public show for computer and video games players.

## Overseas

March 16-23, 1994
CeBIT 94
Venue: Hanover, Germany
Organiser: Deutsche Messe

## (010 49511 890)

Europe's premier information technology show often used by Commodore for the launch of new hardware.

# Amiga advice over the phone 

A CONSULTANCY firm has just been set up for people who need up-to-the-minute information and support for serious Amiga software and hardware.

BVCC is run by the former technical manager of Micro-Pace UK, Ben Vost, who says the service offered is similar to that seen in the PC and Apple Macintosh markets.

A range of services are offered: telephone advice, scanning, translation, public domain distribution, face-to-face tuition and software and hardware recommendations.

The telephone support service is open between 10am and 10pm and gives information on 3D modelling, graphics, video, desktop publishing and other productivity software.

## ANSWERS

The firm can say whether hardware will be compatible with users' existing peripherals, and if they don't know the answer to a question BVCC will try to find the information within a day.
Photographs up to 6 in $\times 4$ in can be scanned by the firm at in a range of formats at 24 -bit, and if the picture is to be used in a 16 -colour Windows environment the palette will be correct.

Manuals and documentation for French and German products can be translated and even reprinted if required, and face-to-face tuition is available for first timers.

Courses on specific elements of Amiga computing such as desktop publishing are also run.

The cost of phone advice is between $£ 5$ and $£ 6$ per 15 minutes or part of, and others prices can be requested from the firm by telephoning 081-567 4623

## Govermment act on child porm

PORNOGRAPHERS holding simulated indecent images of children on computer disk could face prison under new legal provisions just announced by the Government.
The move follows a recent case where pornographic pictures of women were scanned and modified to make their bodies appear more child-like.
Children's heads were superimposed onto the images to produce convincing "child pornography" of photographic quality.

Although it has not been tested in court, the Government believe that because the images were simulated and not actual photographs, the existing law might not cover them.

The new measures will be included in forthcoming criminal justice law. They will give courts the power to impose jail sentences of up to three months, a $£ 5,000$ fine, or both for possessing such material. Traders will face up to three years in prison.
"We must send the clearest possible signal to pornographers that their activities will not be tolerated," said Home Secretary Michael Howard.
"It's vital to take tough measures at the outset if we are to succeed in stamping out this vile trade."

## Games malkers agree on ratings

EUROPE'S games makers have agreed overwhelmingly to introduce voluntary video-type classification on all floppy disk, compact disc and car-tridge-based software.

The move is intended to help improve the image of computer and video games, following a year of media concerns over their effects on health and society.

Games publishers will fill out rat ing assessment forms which ask whether their programs contain certain types of graphics material and which of four ratings they think should be given.

The titles will then be sent to the Video Standards Council where the final decision will be made. Among other things they will be looking for extreme violence and sexual content.

The four ratings will be up to 10 years old, 11 to 14 years old, 15 to 17 years old and over 18 s .

Although retailers will still be able to sell products to children younger than those for which the game is recommended, worried parents will be able to see the guidelines.

ELSPA's general secretary Roger Bennett said members who release titles without sending them for classification could face a ban from the association.

## REM with FMV?

ACCORDING to sources close to Commodore the firm will package the CD32 Full Motion Video module with a disc containing hits from pop group REM. It is expected to cost £199.

# You cant use Software this Powerful, and produce Documents this Good... 

## Redux revisited

The development of Emplant's Macintosh emulation module steams on. With Emplant 3.2, which should be available about the time you read this, nearly all the planned features will be in the program, which should free Utilities Unlimited to get rolling on getting the IBM emulation module out the door.

The biggest improvement is that the emulator now acts like a "32-bit clean" Macintosh, which means you can use almost all of your Amiga's memory with the emulation, and expect increased compatibility with newer Mac applications. The emulator now supports direct file transfer between Amiga and Mac disks - just choose the file in a Mac or Amiga file requester and send it over; modules will be added for translating common file formats, such as PICT to IFF.

It is now about 20 per cent faster, and about 215 per cent faster for float-ing-point operations. Compatibility problems with Microsoft applications have been solved, Sound Manager support has been added, and UU hopes to get support for the Amiga's serial and parallel ports into this version.

For more information check with your local Emplant distributor or contact Utilities Unlimited at (602) 680-9004 voice; (602) 543-6407 fax;(602) 453-9767 BBS, or j.drew2@genie.geis.com via Internet.

# Top marks for an improved language release, and news of two competing Apple emulation systems in this month's Stateside report from Denny Atkin 



The premier development system for the Amiga (Commodore use it for AmigaDOS) now has a real plus - two of them, actually. The newly released SAS/C Development System v6.5 now includes not only a top-of-the-line C -language compiler, but $\mathrm{C}++$ as well.

If you haven't used $\mathrm{C}++$, it's an object-oriented version of the C language that helps tame the obscurity level of C a bit. This release a huge improvement over the company's old C++ compiler, which was marketed under the Lattice label.

C++ is now fully supported by the CodeProbe debugger, so you can now display $\mathrm{C}++$ auto, static, and extern variables; display members of $\mathrm{C}++$ classes, and display $\mathrm{C}++$ source code in both regular and mixed modes. Now it's
like using a real $\mathrm{C}++$ compiler instead of an add-on for a C compiler.

Other enhancements include a brand-new profiler, SPROF, which helps you optimise your programs by showing you the number of times each function is called and the amount of time spend in each function, including subroutines.

SPROF not only works on regular tasks, but also on shared libraries, dynamically created tasks, devices, and nearly any other kind of AmigaDOS task.

This will come in particularly handy since v6.5 has several new features, including startup modules, designed to make writing devices easier. SMFIND is a new Workbench utility which will search for particular strings in your projects. Utilities are included to ease conversion of
files from earlier versions of Lattice/SAS C, and even from Manx Aztec C.

As in previous updates, the compilet now produces better, faster code. Versices 6.5 ships with the AmigaDOS 3.1 include files and link libraries. There are over 3 te new pages of documentation, bringing the reference material up to an astonishing $1,500+$ pages. There's now also over 1.3 NB of on-line documentation. The package requires 1 Mb of RAM and two floppies for the C language (more memory and a hard drive are recommended), and 4 Mb RAM and a hard drive for C+. programming.

For more information, contact SAS Institute, SAS Campus Drive, Cary, NC 27513; phone (919) 677-8000, extension 7001.

## The Editing Edge

Texas-based Inovatronics have released an incredible new text editor called Edge. This easy-to-use editor is completely configurable - the entire user interface, from menus to keyboard commands, can be changed to fit your whims. ARexx macros can be written or recorded automatically. You can open multiple windows with different views on the same file - great for cutting and pasting in large documents. It supports all screen modes and resolutions, and will open on public screens.

It has multiple-level Undo and Redo, limited only by memory. The editor features blazing speed in scrolling, formatting, and search/replace operations. The on-line help is unmatched - the entire manual is available using the AmigaGuide help system.

Inovatronics recently opened an office in the UK, but this product was so impressive (the first editor to get me to switch from TurboText) that I felt it deserved a mention.

And you don't even have to call Texas to get info on it: Just contact Inovatronics, Unit 11, Enterprise Centre, Cranborne Road, Potters Bar EN6 3DQ. Tel: 0707 662861, fax: 0707 660992.

- In a previous column, I mentioned that the new version of CanDo required you to contact Inovatronics to get the files needed to distribute standalone applications, and that a licensing fee might be involved.

Inovatronics contacted me as this column was going to press and said that the necessary files would soon be available on-line to allow CanDo owners to distribute their applications without contacting Inovatronics first. The company does request, however, that you send them a copy of any application you create and distribute with the program.


## A-Max gets colour

Nobody wants a black-and-white TV any more, so who wants a black-and-white Macintosh emulator? Canada's ReadySoft have updated their A-Max Mac emulator to support colour and the newest releases of Apple's operating system. A-Max IV is based on the A-Max II+ Zorro II board, so you'll need an Amiga with slots to use it.

Among the emulator's features are support for Apple's System 7.0 or later using inexpensive 128 k Mac Plus ROM chips; full colour support ( 16 colours on ECS machines, 256 on AGA, and true 24-bit with Picasso II, Retina, EGS, and some other boards); support for multiple display devices if you have an add-on graphics card; auto-scroll screens of any size; and stereo sound support and Apple SuperDrive emulation. It's a full 32 -bit clean emulation that supports up to 2 Gb of RAM. Like previous versions of A-Max, this emulator supports using the Amiga's serial and parallel ports on the Mac side. As a bonus, you can save ImageWriter 9 -pin and 24 -pin output to IFF files, making transferring Mac printouts to Amiga applications a snap. You can also cut and paste date between the Mac clipboard and the Amiga clipboard device.

Unlike earlier versions of the A-Max software, this update multitasks with Amiga software and uses standard AmigaDOS device drivers to access hard drives - no more need for custom.AMHD files. Stock A1500 and A2000 owners will need to upgrade their systems, as the emulator requires at least a 68020 processor, AmigaDOS 2.1 or later, and 2MB of free RAM; you'll also need Mac System 7.0 or higher on the Macintosh side. Pricing is pretty steep at the retail level: The board retails for $\$ 509.95$; A-Max II owners pay $\$ 119.95$ for update disks and chips; A-Max cartridge owners can get the board for $\$ 249.95$ after trading in their cartridge; and owners of "other" Mac emulators (read that as "Emplant") can trade in their board and get A-Max IV for \$279.95. Interestingly, Emplant developer Jim Drew has claimed on various on-line networks that A-Max IV violates software patents he has on Emplant, and that he will attempt to get a restraining order to prevent A-Max IV from being shipped out of Canada.

For information, contact ReadySoft, 30 Wertheim Court, Suite 2, Richmond Hill, Ontario, Canada L4B 1B9; call (419) 731-4175 or fax (419) 764-8867.

# You Can Now... with New Final Writer 

# Put Your Finger on the Buttons of the Ultimate Amiga Word Processor 



From the publisher of the acclaimed Final Copy II comes its new companion, Final Writer - for the author who needs even more! If you already use an Amiga Word Processor, it won't include the complete and comprehensive array of features found in this latest addition to the SoftWood family. Can your Word Processor...
Output crisp PostScript ${ }^{\text {IM }}$ font outlines on any graphic printer (not just expensive lasers), and was it supplied with over 110 typefaces? Import, scale, crop, view on screen and output structured EPS clip-art images (Final Writer is supplied with a hundred), again, on any printer? Also create structured graphics and rotate them along with text to any angle, giving you DTP quality presentation? Provide a huge range of printing options (eg, thumbnails, scaling, crop marks etc. on PostScript ${ }^{\text {TM }}$ printers) and fulfil other advanced Word Processing functions easily such as automatic indexing, table of contents, table of illustrations and
 advanced capabilities. With its complement of user definable Command Buttons and Superb Manual, Final Writer is simply one of the easiest programs to learn and use.

Final Writer is not just a one-off product...
SoftWood are acknowledged as the World's leading software company publishing for the Amiga and no other system. So, if Final Writer exceeds your current requirements - whatever your Document Processing needs, whatever your Amiga SoftWood will still have the Perfect Package for you...

Pen Pal or Final Copy II and Proper Grammar II....a Complete Range.
Once you become a registered SoftWood user, you'll gain access to unlimited free UK technical support (others often charge

Though doubters and cynics in the industry have of late begun to mutter ominously about the future of the Amiga market, the people whose opinions really matter - the buying public - have continued to show a great deal of optimism and faith in the machine. Two recent Amiga shows are all the evidence one needs for that.

Cologne, hosting the World of Commodore show from November 5 to 7, has always been an important venue for Commodore events, and this year's effort was no different. Dozens of developers and manufacturers turned up to join the box shifters, and the best of European engineering went on display.

Peripherals being developed by several German and European companies included high speed digital broadcast cards based on Jpeg technology, Mpeg players, PCMCIA fax modem cards, accelerators, and even a transputer card. Video applications were as usual well represented, and the number of stands running digital movies from hard drive was matched only by the number of smiling new Elite 2 owners.

Surrounding all this showy behaviour was a determined crowd of punters with bulging wallets and an eye for an upgrade. The buying frenzy reached such epic proportions at some stands that wobbly trolleyloads of replacement A4000s had to be wheeled up to replenish stocks once the machine had sold out.

By midday on Saturday, the height of the show, there was a 200 -yard queue outside the cavernous hall and the security guards were forced to close the doors and send people out by another exit until things calmed down.

The milling crowds of waiting German enthusiasts were reduced to cheering throatily for the lucky few who were allowed to pass through in dribs and drabs.

With so much interest in the Amiga, such a frenzied burst of spending, and the healthy display of top notch Amiga add-ons we saw while at the show, it is clear that we still have a vibrant machine in a strong market.

The leisure market may be suffering from PC and console competition combined with the games industry's determinedly gloomy view of the Amiga, but the productivity and videography industries are doing very nicely.

The UK side of the same coin presents an interesting contrast. At a recent sizeable show in London, the emphasis was on the entertainment industry as a whole rather than the Amiga, and the consoles were the most obvious force.

A 40-feet high helium-filled Sonic hovered menacingly over everyone at the show in a sort of symbolic gesture of the truth about Sega hype: neat presentation, but mostly hot air.

Little that was new was on show, but the assembled public seemed to be having a wail of a time, and there much more of an atmosphere of fun than at the German show. Games and playing them were the predominant themes and nothing the odd technical demonstration

## The Amiga is alive and well and living in Europe, as the latest Amiga shows have proved


could do was able to dispel the atmosphere. As usual, the good old British box shifters were there in numbers, and more than a few happy customers could be found taking advantage of special show prices, so although there was a disappointing lack of high-end stuff (relegated to an oasis around the Commodore stand), there was still a positive message.

Had we visited just the London show and missed out on Cologne, the impression of a slowly declining Amiga would have been overpowering. As it was, we were able to conclude that in the face of the stiffest competition imaginable, the Amiga is still jumping off the shelf and into the hands of enthusiasts all over Europe.

The UK industry's over-concentration on the games side of the Amiga leads many in this country to make pessimistic predictions about the machine, ignoring as they do the Amiga's other talents.

No-one has properly surveyed the video and multimedia industries to calculate exactly what sort of market share the Amiga has there, but if the 52 Amigas used in the production of Jurassic Park are anything to go by, there's plenty of room left for expansion.

We enjoyed a huge boom in the low end of the Amiga market while its prowess as the best games machine was
unchallenged. These days, with the consoles and the PC making a determined thrust in the leisure area and so much development now concentrated on CD-ROM, the Amiga is fortunate in having a solid image in other areas.

As the games side of the Amiga changes, evolving towards AGA games and, hopefully, CD32 in the coming year, it is difficult to predict how the market will develop.

Some in the UK games industry are certain that the Amiga has had its time, mostly through the inevitable move from floppies to CD discs, but as the Amiga has made a bold move into CD-ROM with CD32, can we share this pessimism?

We must wait and see what the UK software houses make of CD32, but at least the signs are that the Amiga will continue as a strong independent platform even without a leading stake in the games industry.

The evidence is on your TV set in the form Babylon 5, Deep Space 9, SeaQuest DSV, Jurassic Park, and many other examples of the Amiga's use as a cheap, effective videography tool.

You might miss this sort of involvement at a UK show, but take the wider European view and 1994 is going to be a much better year for the Amiga than many of our games-obsessed cynics would have you believe.

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Design Works is a structured drawing program, which means it works in a very different way to DPaint and the other bitmap art programs most users have at one time owned or used.

Instead of storing its drawings as a map of pixels, rigid and set once saved. Design Works uses mathematics to describe the curves, colours, and areas covered by the drawing.

The method has one huge advantage over bitmap art in that the drawing can be scaled, rotated, and reshaped without losing resolution and without the jagged edges ("jaggies" as they're known) which result from changing the size of a bitmap drawing.
When the images are printed, either from a word processor or DTP package or from Design Works itself, it is printed at the highest possible resolution, leading to crisp outlines and no jaggies.

Everything needed to run the program is present on your CoverDisk, including a fonts directory, and it is

## With Design

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easy to install Design Works on hard drive.

Simply boot from your normal system partition, put the Design Works disk in df0: and type the following commands:
> makeDir dho:Designvorks
> COPY DFO: : ? TO DHO:DESIGNVORKS ALL

Now Just double cltck on the Design Works icon on your hard drive and off we go. The directory you have created includes a directory with four fonts System, Times, Helvetica, and Courter. If you do not have these fonts already,

copy them to your fonts directory using the command:

## COPY DHO:DESIGNYORKS/FONTS/E? TO FONTS: ALL

Of course, DH0 has been taken as an example, but if you have a partition called Work or DH1, just replace DH0 with this drive name in the commands listed above.

Right, let's start the program by double clicking on the Design Works icon. There will be a delay while the program reads the fonts directory, then a window will open up showing a blank page superimposed by a grid, and three windows for the toolbox and current pen and fill colours.

If you have a copy of the ProWrite

## The

word processor, Design Works' interface will be familiar to you, but there should be few problems for those who haven't used a New Horizons package before as the usual hotkey commands do the usual things. Let's start with a sample document.

Select the Open option from the Project menu, then double click on the Sample Documents directory. There should be a number of examples in this

# Vidi Amiga 12(RT) 

## Author: Rombo

The Vidi Amiga software on this month's CoverDisk is the full release of Rombo's latest software for the Vidi Amiga range of digitisers, bundled with the Vidi Amiga 12/24 (RT) hardware, with full grabbing and save options enabled.

Users of the existing Vidi Amiga 12 hardware should be able to make use of this software with the hardware they already have and those without the hardware can use it to process images or take advantage of the offer we are running in this issue to buy Vidi Amiga 12 (RT) at a reduced price.

As usual, the 12(RT) software has been archived so that we can unpack it onto its own disk, and as soon as this is over users should boot from the resulting disk.

The software runs from Workbench and on appearing will offer a main screen with the four main sections and two preferences screens available via button controls. Most readers won't have the Vidi hardware and those that do won't need to be told how to use the grabbing screen, so let's go straight to the edit menu.

Click on the Load button at the bottom of the screen and
select Sean.ilbm from the file requester to load a digitised picture of Sean Connery. If you have a non-AGA Amiga, this Ham8 image will not be displayed, so load the test card image from the Vidi disk or choose a Ham file from your own art work. Now that we have some data to operate on, click on Edit to go to the edit screen.

Before any editing takes place we must convert the image into RGB data for 12 (RT) to go to work, so choose GetRGB from the list of operations in the centre window. The command name will appear on a button to the right of the window and if we click on it the operation will be carried out.

## PROCESSING

Once that's done, we can start to mess about. For complete fiddliness, using every one of the processing controls in a random order would give you an idea how they all work, but there are one or two more spectacular ones we can go straight to.

The first process we'll try is emboss, which will convert the picture to a grey scale relief map of Sean's fizz. There are no user-definable settings for this feature, so just click on Emboss and wait for Sean to be turned to stone. Take a
good look at the display and note that whiter areas appear higher and darker areas lower. Users can create very neat effects by loading DPaint IPFs and applying this or any of the other Edit features, so keep an eye open when using this software for opportunities where it might be useful.

Before any other operation is carried out, click on Undo for the image to be rapidly returned to normal. Vidi Amiga 12(RT) keeps a buffered copy of the original image to ensure that the user can experiment without constantly loading the image back in again.

At all times, the image's size and whether or not it has



Now edit the pattern fill to produce an orange effect

Stort at the
beginning with
the simple body and head shapes
directory, so double click on the NH Logo file to load it up. This is a simple drawing of the New Horizons togo and we ll use it to show how structured drawings are put together.

Look at the toolbox window and you should see that the arrow icon is active. This means we are in object manipulation mode, and if you click on the logo itself, drag points should appear at its tour corners. Keeping the
left mouse button down, drag the drawing around the screen and release the mouse button. then click on one of the four drag points and move it around. Notice how the pointer changes to a crosshair and we can alter the width and height of the drawing?

Move the drawing to one side and make sure it is more or less the same shape as it was imported, then click once on it with the left button to make it
active and select Ungroup from the Arrange menu. The ball in the middle of the logo should now have its own set of drag points. What we have done is to split the drawing down to its next most complex component parts, and we can now drag the ball around without affecting the rest of the drawing.

For now, drag the ball to the middle of the screen and use the Ungroup option again. It you have any problem
getting hold of the ball, click on an area of the background it is sitting on and select Move to back from the Arrange menu.
Once the ball object has been ungrouped you will notice that it was made up of the red ball, a spot highlight, and an area of shadow, which were grouped together to give the impression of a 3D ball. You should by now have reatised that a structured drawing is made up of many component drawings grouped together to form the whole and that any drawing can be edited by ungrouping it and rearranging its parts.

How much easier is this than rubbing out a line or filled area in DPaint? Lots. Now setect Close from the Project menu, don't bother saving changes to the drawing, and we'Il draw a seasonal snowman.
Our snowman will be made up mostly of two white circles, one each
for the head and body, but if we draw them as white against a white background things could get tricky.

Look at the Fill and Pen colour windows on the right of the screen, and choose white as the fill colour and light blue as the pen colour so that we can see the outline of our circles.

Now draw two circles and drag or re-
been converted to RGB are displayed on the right, so there should be no confusion when working with a number of frames.

Go back to the main screen by clicking on the close gadget on the Edit screen's window and click on the Carousel button. This option enables the user to load a number of frames from an animation or sequence of digitised images and edit the order they appear.

Sequences can be played from here at varying frame rates, backwards or forwards, and frames can be moved to a new position in the sequence. For now there should be a
thumbnail representation of the image we have in memory, so click on it once then on the Del button to start with a fresh slate.

Now go back to the main screen and load our image twice (yes, twice!) and return to the Edit screen. We should have two images in memory, a fact which is reported in the bottom right hand corner of the screen.

Use the GetRGB option with both images, swapping between them using the slider control, then go back to frame one. Click on the Cut button and cut out an area of the image (use the eye if you have loaded the Sean picture),

then go to the second frame and click on paste.
You should now be able to paste the brush from the first frame into the second. If this doesn't happen it is probably because you've forgotten to GetRGB, so don't worry.
OK, we know how to load images, more than one if need be, use the processing tools on it, and cut/paste from one frame to another. The Carousel option now requires a bit more explanation.

## THUMBNAILS

When we go back to the Carousel screen, both frames should be visible as greyscale thumbnails. Notice that they are much clearer now that the program has some RGB data to work with.
Starting from left to right we can see the program controls which enable us to jump to any other section, then a list of switchable file specification buttons, and finally a set of controls for editing and viewing a sequence.

The top button of the image specification controls can be used to toggle between two sets of images. Let's say we load a pure 24 -bit file which the software will convert to a

Vidi's image processing tools can take an ordinary picture and do some far from ordinary things to it. Here Sean has been turned Into a colour negative and embossed


# I 

size them using the drag points until they are in the rough shape of a snowman. You will have to cllck on the arrow icon once the circles have been drawn to put us back in manipulation mode.

Ensure that the head overtaps the body a little and use the Arrange menu to bring the head circle to the front of the drawing, then hold down the Shift key and click on both circies. This is cafted multiple selection and makes both objects active.
Next, choose Group from the arrange menu and we should now be able to move and re-size both circles as if they were one. For now, we don't want them grouped, so ungroup them
and we ll add some detaip
First of all, some facial features. Select black as both the pen and fill colour, then draw a circle which we 'll use as an eye. Now click on the black circle and choose Duplicate from the Edit menu. We didn't have to do this in such a simple case, but when you need two objects to look exactly the same the easiest way is always to create one and then duplicate it.

Move the two eyes to the correct position on the snowman's head, and notice how they don't move with complete smoothness. That's because the default for Design Works is that objects should align themselves to the grid you see superimposed on the screen.

## THE GRID

This method is handy to ensure that objects line up correctly with each other but can be a pain when trying to precisely arrange small details. Select Grid snap from the Layout menu to turn this feature off, then place the eyes correctly and turn grid snap back on. Easy, eh?

Now for the nose. We'll need a carrot, but there is no orange colour on our fill window. Design Works uses eight colours on-screen (the maximum which can normally be produced by colour inkjet or dot matrix printers) and dithers them to produce the impression of more cotours.

In this way, the program works in the same way as your printer and makes it more likely that what you see on screen is what you get on paper. We need theretore to make a pattern which will look like orange, and easy job of mixing red and yellow.

Select Fill patterns from the Layout


Use Postscript or CompuCraphic fonts with Design Works
menu and a window will appear with the current fill patterns in boxes. To change one, click on the light yellow pattern (fifth from the right on the bottom row) and it will pop up in the edit windows.

On the left is a close-up of the pattern and on the right is a representation of how it will look on-screen. so choose red from the selection of colours below the windows and fill in the white pixels with red. This will result in a red-yellow dither pattern which will look like orange. Click on OK once you're satisfied with this and make sure it is the current fill pattern by checking on the fill window.

To draw the nose, choose the closed polygon tool (extreme right, bottom row) and draw a triangle in roughly the shape of a carrot. Cllicking on the first point to close the triangle will pop us back in manipulation mode, but if you want it is easier to draw two sides of the triangle and select Polygon...close from the Edit menu.

Now scale the triangle to the correct size and put it on the snowman's face. To finish the face, we need a mouth, so
use either a few black circles or draw a smile using one of the drawing techniques we ve already explored, and slap a grin on our frozen friend.
If you want to do some detailed work on any of the elements, choose Enlarge from the Layout menu, and remember that the mouth can be made to go under the nose by bringing the nose to the front using the appropriate option from the Arrange menu. Once the mouth is in place, multiple select the eyes, nose, and mouth and group them together.
Next we'll make a scarf using the freehand drawing tool (second from the right, bottom row). Select red as the fill colour and black as the pen colour and draw a scart around the snowman's neck.

When you've finished this drawing, a spline-based polygon will appear complete with drag handles which you can use to alter the shape of the polygon.

Use the Enlarge option for close control of the polygon if required, then draw the second part of the scart hanging down from the snowman's
$>$
HAM image. We can't have that in the same sequence as a load of Ham8s, so Carousel starts another sequence off in memory.
Using the toggle button to swap between HAM and Ham8 will also swap between the HAM and Ham8 sequences. Next is the resolution button which does a similar job if there are two sequences with differing resolu-


The Carousel option is ideal for moving frames around
tions, a button to swap between single image settings and sequence, and finally the file format button.

Clicking on this reveals that we may load a variety of images, from TIFF to BMP to 24 -bit, all of which will be converted to RGB and displayed for the user to work on. Vidi Amiga 12 (RT) is therefore extremely useful for those who might have images taken from PC or Mac, as the TIFF and BMP formats are used extensively on those machines.

The next set of controls enable us to set the start and end point of any sequence we'd like to view and is accompanied by a slider giving variable control over playback speed. If you have a fast enough Amiga, you should be able to achieve 20 frames per second or more.

## VIEW OPTIONS

On the far right, the last set of controls give the user the option to view a sequence backwards, forwards, or in pingpong fashion, view a particular frame or play the whole sequence. You will also find the Del and Move buttons here.

These are most important because by using them it is possible to select a range of frames and either delete them or move them to another part of the sequence, one of Vidi's most powerful editing features. Mastery of these controls
and the technique of cutting and pasting frames is essential if you are to get the most from the software.

Everything else in the Vidi Amiga 12 (RT) program should be either easy to experiment with or to pick up as most of the features are self-explanatory. With a bit of practice, home video enthusiasts who take advantage of our special offer should be editing their own digital movies within days.


If you don't like the defoult grabs, just change the grabbing preferences
anck. This should go under the other sirt of the scart, so make sure you use a backwardfforward controls from the Arrange menu to achieve the sesired effect before grouping the two regether.

We now have a basic snowman to Wich we could add a hat, a couple of trms, and a broom, and we ve used nost of the basic drawing and editing cels to do so. At the moment, though. me would be advised to save the work tone so far, and there are two ways of doing this.

One is to save the project as a Design Works document, a process which saves everything on the page, but we could also export the drawing as a clip for use in other programs. To do this, multiple select all elements of the drawing, group the whole lot together, and use the Export Pict option from the Project menu.
Now to add some text. Go to the Text menu and select the Font option, but don't let go of the mouse button yet. There should be a sub-menu with three fonts on offer and an option marked Other. Choose the Other
option and a list of the availabie fonts should appear. If you are booting from the Design Works floppy, you should be able to choose from four fonts with their various sizes, but if working from hard drive you should be able to select from any of your bitmap, CompuGraphic, or PostScript fonts.
Choose one you like and make sure the size is at least 24 points, then type an approprlate message betow the snowman. If this were a New Year card, "Happy hogmany" would do just fine. Click on the arrow icon to finish entering text.

The text should appear as you type it just as if this were a word processor, and when you ve finished it will be present as a text box. Now look at the text menu, which offers options to make the text bold, italics, or underlined, and from where we can control justification and spacing.

There are enough word processorlike features to give our text the look we want, and none of the features in this menu should need much introduction.

Note that justification is carried out
existing
drowings by
ungrouping
them
in relation to the text box rather than the text, and that if we choose centred text, it will be centred in the text box itself.

We can change the text colour using the pen colour window and the background colour using the fill window, so there are plenty of options to ensure the final result is just as we 'd like.

Finally, let's look at printing the drawing. As already mentioned, Design Works uses eight colours with dithering to that drawings appear on paper as they do on screen, but if you have a black-and-white printer the program will use shades of grey instead.

## DRIVERS

The Design Works floppy includes printer drivers for Epson, Canon BJ10, Star LC10, and PostScript printers, which covers most of the available models. If you are using the program from a hard drive with printer preferences already set up, Design Works will use them, and there's enough space on the floppy for other drivers, so DeskJet owners for example should be able to use the HP500 drivers we ve given away in the past.

Select the Print option from the Project Menu and the defaults should be correct. That is, eight colours, single sheets, $360 \times 360$ dpi, but you can change these if you like to suit your printer. The toggle option from normal to high quality makes for better output, but it will take longer to print.

And that's all we have time for, folks. Design Works is one of those packages with which it is easy to experiment and explore, so you should be able to get plenty out of the program with this introduction. Happy drawing.

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## PrintManager 2.0

## Author: Nicola Salmoria

This is the latest version of the best shareware print spooler around and is one of the most useful utilities a printer owner will ever have. The program's job is to intercept all print commands from Workbench or any program launched from Workbench and spool them to a pre-set area in memory or on disk to await printing.

An obvious advantage of this approach is that it almost immediately frees the program which issued the print command to do something else. No more waiting around for ages while that 15 -page listing churns out of the dot matrix.

To install the program on hard drive, just drag the PrintManager icon to your Tools/Commodities drawer then type the following command:

## COPY DFO:OEVS/SPOOLER.DEVICE TO DEVS

So long as your Workbench disk or hard drive has the commodities library, the program will run perfectly.

All functions of the program are controlled from the icon's tool types, including the drawer where print jobs will be stored before printing, and the interface is very intuitive so most printer users should have no problems.

To test PrintManager, select its icon and look for the tool type SPOOLDRAWER=T:SPOOL and change it so that it reads SPOOLDRAWER=RAM:. We should now be able to load the program's document file and by holding down Alt-

Shift-O print it to the spool drawer.
If everything works it should take only a split second for the printing to be accomplished and you should be able to continue reading the document while your printer takes its orders from PrintManager.

Full details of the other tool types can be found in the on-disk documentation, but this is the essence of how PrintManager works. It is easy to use and makes printer use a lot less hassle.


## COVERDISK



## Assign Manager <br> Author: Matt Francis

Assigns can be a real pain for hard drive users. You soon have so many of them that the list is as long as your arm, and many of them can be redundant in most situations. To remove an assign can also be a pain, and keeping track of them is sometimes impossible, so Assign Manager does it for you.

The program is designed to be used as a Prets editor, so to install it to hard drive just drag the icon to your Prefs drawer and add the following line to the beginning of your user-startup file or startupsequence:

## ASSIGNS USE

As Prefs is usually part of the command path, the Assigns program should be found and initiated.

Keeping an eye on your assigns is now a simple
matter of running the program and scrolling up anc down the assigns. They will be listed as one of four types: simple, defer, add, or path.

Simple assigns are the most common and are used by most commercial programs which install on hard drive. Defer assigns are those which look for a directory and don't panic if they can't find it, Add assigns add a directory to, say, the LIBS: logicel device, and Path assigns just add the assigned directory to a the AmigaDOS path.

Full instructions for this program can be found in the on-disk documentation.


## EditKeys

## Author: David Kinder

Keymaps are small pieces of code residing in the DEVS:Keymaps drawer which can be loaded using the AmigaDOS SetMap command to alter the way the keyboard reacts to keypresses. If we could edit our keymap we could, for example, tell the Amiga that when F1 is pressed it really means "Run SYS:DPaint"

The flexibility of a program like this is immense as it can be used either to produce hotkeys such as the F1 example above, customise a keyboard for a disabled user to make typing easier, or change a USA keymap into a GB keymap.

Run the program by double clicking on its icon, at which time a file requester should appear with the available keymaps for you to choose from. If this doesn't happen just use the Load command from the program's menu to load one.

There wasn't enough space on the disk for a selection of keymaps and we figured you'd rather edit your own, so you'll have to drag the program icon to your Workbench floppy or hard drive and run it from there. If this is done you should be able to edit keymaps from your own Keymaps drawer. See the on-disk documentation for full instructions.

## ABCDir

Author: Marc Dione

ABCDir is a directory utility similar to TDM and SID 2, both of which have made appearances on past CoverDisks, and is an attempt to bring together everything the author liked about other directory utilities in one program. To this end, the program is completely self-contained and even has its own Shell window built in.

When first loaded, the program will open an interlaced screen using a fairly small font which, though readable on high res monitors, will cause a bit of eyestrain on a TV or 1084, so our first job is to alter the configuration.

Look at the gadget strips between the two main windows and you'll see that there's a Config button three spaces up from the bottom of the left hand strip. Click on this button to reveal the config options.

The list is a long one, so just scroll down it using the slider until you see an Interlace option, which should be the last one. Click twice on this
to make it read non-interlaced, then on OK. Got it? We should now be able to see better, but notice that the Shell window is no longer visible As this sits on the lower part of the screen it is not accessible if you use a non-interlaced screen.

Sorry, but at least all the gadgets are available and they're the important elements. I mean, we use directory utilities to avoid Shell, don't we? If you feel the need for a Shell window and the extra window showing all devices and assigns, select the double height non-interlaced setting to open a double height window. Simply move the mouse pointer to the bottom of the screen and the lower portion will scroll smoothly into view.

With that minor sticking point out of the way ABCDir should be a simple program to use. It works in the same way as most directory utilities in that you first select a device from the gadgets above the main windows, then a directory by clicking on it, then a file. Once the file is highlighted you just click on the tool of your choice from the central strips.

Full instructions for this shareware release can be found in the on-disk documentation.

## Think you can do better?

Want to be famous? We are always on the look-out for quality Amiga programs for the CoverDisk. If you think you have written something good enough for others to share and enjoy, please send it in and we'll have a look.
The Amiga Computing CoverDisk is used by thousands of Amiga owners every month in places all over the world from New Zealand to the USA, so if your submission finds its way onto the disk, you could be famous.
Please make sure that you list ALL library and other files necessary for the program to work. Feel free to design your own icons for programs that run from Workbench, but please don't make them too big.
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Unfortunately we cannot undertake to return disks sent to us as the volume of submissions makes this an impractical exercise.

Post your submissions WITH A COPY OF THIS FORM to: Colin Yarnall, Amiga Computing, CoverDisk Submissions, Europa House, Adlington Park, Macclesfield SK10 4NP.


## COVERDISK

# The Amiga Computing CoverDisk is designed to be as simple to use as possible. Follow these instructions and you'll be up and running in no time! 

New readers may have difficulties using our CoverDisk, so we have included this page to help you out. Below we explain how to copy files from one disk to another, how to copy the entire CoverDisk and how to de-archive programs. None
of the first things you must do when get your CoverDisk is make a backup copy, then put the original CoverDisk away for safe keeping. As a rule you should also do this with the majority of your software collection.


## How to make a backup

To copy the entire CoverDisk, load up your Workbench disk, then either click once on the CoverDisk icon and select Duplicate, or select Copy from the Workbench menu, or open CLI/Shell and type:

## DISKCOPT Fron Dofo: to pro:

When prompted, put your CoverDisk (the source disk) in dfo: and be ready to replace it with your blank disk (the destination disk). Follow the Amiga's on-screen prompts until the disk copy is completed. Now put the original away in a safe place and use your backup.

## Copying individual files

You might at some point want to copy a single program from a CoverDisk to your compilation, Workbench disk or even your hard drive.

To do this you'll need the COPY command. As most CoverDisk programs are stashed away in their own directories, the quickest way to copy a program is to copy the whole directory at once. Use the command:

## COPY (directory) TO (nevdisk) ALL

where \{directory) is the full pathname of the directory you wish to copy, and \{newdisk\} is the name of the disk and directory into which it will be copied.

For example, if you wanted to copy a utility called FRED from CoverDisk 27's Utilities drawer to a directory called FRED on your Workbench disk, you'd type:

## COPY COVERDISK27:UTILITIES/FRED TO WORKBENCHT.3/FRED ALL

Alternatively, you can click once on the FRED directory icon and drag it across to the new disk's window. This has the advantage of creating a new directory for you and copying the icon as well.
Once you have moved a particular program to where you require it you could experience some problems running the program. This is sometimes caused by the program not being able to find files which it needs to run.

A good example is the text files on the CoverDisk. These have been crunched using PowerPacker, so when you try to copy them to another disk and then try to read them you can't unless you have also copied the Powerpacker library into your LBS drawer.



So if you have copied a program from the CoverDisk to your Work disk or hard drive make sure you also copy any other files the program requires, ie fonts, libraries, device drivers and Ccommands.

## De-archiving

Occasionally we have so many programs to fit onto the CoverDisk that we have to archive them. Archiving is where we take the entire contents of a disk and compress them into one file which is much smaller, giving us space to fit more programs onto the disk.

Dearchiving programs which are on the CoverDisk is a very simple task. If a program has been archived then you will need a blank disk to dearchive it onto.

Say we have archived a program called FRED. You simply double click on FRED's icon, and will be asked if you have a blank disk ready to dearchive to. Type " $y$ " or " n " accordingly.

Your computer will then copy the archived file into its memory and ask you to insert your blank disk. It will proceed to format the disk, and will then de-crunch the archived file onto your blank disk.

Once this has been done you can simply reboot your machine with the disk which contains the dearchived program on it and then use the program as instructed in the CoverDisk pages.

Note that if you have a Workbench 2 or upward machine you must boot with the CoverDisk writeenabled to perform the dearchiving process.


## Workbench 3

If you have a Workbench 3 machine, don't worry - most if not all of the programs on the CoverDisk will work on your machines.

If the program is specifically designed to work with Workbench 3 then you may have to copy the program to your hard drive or Workbench disk using the process described earlier on this page.

## OOFFERS

## Have on this...

Not only have we given you - absolutely free - the complete DesignWorks software on the CoverDisk, but we've got a great manual offer as well! In 96 pages it comprehensively covers every aspect of this superb structured drawing program for artists and designers.
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The easy-to-read 64 page manual covers everything you need to you know. It takes you through setting up equipment and provides tutorials covering the most important points of the Vidi Amiga (12) RT package, such as grabbing, mixing your colour image and editing. The comprehensive reference section describes every function of the software in detail. There is also a glossary and a trouble-shooting section.

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[^1]

0nce in a while, there comes an invention that influences the way in which society lives. The car, television, the atom bomb, the computer... Now virtual reality is beginning to show its first signs of growing up from the wildly speculative pipe dreams of its early years into a fully-fledged, commercially viable and above all, exciting industry.

VR has the potential to be the next "big thing" to grab the collective imagination of the world. While television and film only offer a screen to look at, with audience participation rarely surpassing the heady heights of Noel Edmonds's House Party, and the most involving computer games resembling a two-player go on Galactic Body Blows, virtual reality generates a multi-user, fully interactive environment where, in theory at least, the only barrier is the imagination.

At present, not only does VR challenge


One bufton for moving, the other for firing; a
the way games are played when compared to the likes of the Amiga and Super Nintendo, it has an endless stream of possibilities that can be used in all walks of life from 3D walk-through architectural plans to a surgeon training for open heart surgery.

Contrary to popular belief, virtual reality has been around for over 20 years and has only come into the limelight with the increasing technological advancements and due to people like Ivan E Sutherland, Jaron Lanier and John Waldren.

## MEAT-MOMNTIED

As a concept, VR was created by Sutherland at the University of Utah in 1968 where he produced the first headmounted display (HMD) showing a topographic map of the US. Due to the unit's weight, the kit had to be hung from the ceiling, and it had a power cable running down the user's back with 50,000 volts coursing through it.

In another American state during the 60 s, Myron Krueger was creating the first VR games at the University of Wisconsin with the likes of Critter which displayed a video silhouette of the user's head and shoulders. A bug would crawl up to the head to be subsequently removed by the player's hand.

In the '80s, Frederick Brooks created

## Bette

## Why watch a movie when you can be in one? Adam Phillips reports on the rapidly expanding and often controversial world of virtual reality

## Dresclen virtually rebuilt

On February 15, 1945, the Frauenkirche, the Church of Our Lady in Dresden - part of the then East Germany was destroyed by a firestorm. This was brought about by the heavy British bombing two days before which caused a fire to ravage the one of the greatest masterpieces of European architecture until its walls finally caved in leaving a heap of rubble.

Enter ${ }^{9} 90$ s technology to reconstruct the church from scratch using the original materials, sandstone from the Elbe valley and historic building techniques.

To help with the rebuilding, surviving detailed architectural drawings and photographs were used to create a model which was then turned into a 3D photo-realistic computer animation of a flight round the Dresden Frauenkirche.
The sequence of the church will prove invaluable for the reconstruction, giving the designers and builders the closest view possible without actually building it - a virtual reality.


Before its demise during the Second World War, the Frouenkirche was regarded as masterplece of European architecture...


The virtual rebuilding had to contain the atmosphere and emotions to give the rendering authenticity

VIRTUAL REALITYE


## Virtual reality won't merely

 replace TV, it will eat it alive...Arthur C Clarke

them in the virtual world in real time, thus giving rise to an immersive experience, in which the operator is able to manipulate his surroundings via the computer.

At present, there are several peripherals that can be used in VR. These are split into two categories - the sensors and the effectors. Sensors send your signals to the computer and affect your actions in cyberspace (a computer-generated virtual world) while effectors send back data to the user.
An HMD, where the player sees the action, is an effector, while joysticks are sensors. The hand movement devices found so far in the British arcades are the basic joysticks which have one button to fire and the other to move in the direction you are looking. Data gloves, available in America for some time, let your fingers dictate your movements. The next stage is a glove that will enable the user to "feel" their environment through the use of pressure pads in the peripheral.

Beyond this, the biggest and potentially most important immersive effector/sensor is the full body data suit. Virtual Presence's version features 96 sensors to track joint and body movement. With the titanium wiring, the suit is very light and if bought with their latest HMD

Touch Glove allows users to feel virtual reality objects


- a much lighter product than the Virtuality display - it will set you back £5,000. A snip.

The VR technology us everyday punters have access to is in the arcades and appears a little unimpressive and arcane at the moment when compared to cabinet-based machines, with rather slow update rates and basic graphics. But the makers of these machines, Virtuality Group plc, see these as only the first step in a long but definite route to achieving the ultimate in sensory experience.

The company, founded by Dr Jon Waldren in 1987 under its old name of W Industries, is the world's leading manufacturer of virtual reality equipment and software and has sold more than 350 systems in 20 countries at the healthy price of $£ 25,000$ each.

Waldren built his first VR system during his PhD at Loughborough in 1984. From there he established his now booming company and the following year won the British Technology Group Award in 1988.

The company has continued to grow at a healthy rate, knocking aside that old British technological neurosis - great idea, no business sense whatsoever - and has


Sove the Loch Ness Monster In the Virtual Adventures theme park ride coming to you in 1994


E8S miltitary simulotons - one day all gamer will loak this good...


The VR hang glider gome showing off the reallised potential of virtuol reallity

## Sega game could cause eye damage

"With respect to physical side effects of VR, such as eye strain, any poorly designed equipment will introduce eye strain. It is the responsibility of good engineering and correct health and safety tests to ensure products do not reach the market in such a state."
Earlier this year the Independent launched an attack on Sega and its prototype designed for home use, the Sega Virtua VR HMD, for being one of the guilty parties in the eye strain wars that could possibly cause squints in young children if used for too long.

Whether this was true or not is no longer the issue because the equipment the tabloid-style article wrote about was still being researched and tested in the labs and was not available to the general public.

Any hopes though of the Sega's VR unit being released before Christmas are highly unlikely. It's possible that the machine will now be delayed until late Spring 1994.

The reason given is the continuation of extensive tests which are taking longer than previously thought, and to improve the games that were to be released with the systerm, possibly after the very mixed reaction they received.

With the Health and Safety Executive sinking $£ 200,000$ into further research on the possible side effects of VR use, it's obvious the matter is being dealt with seriously, and all parties are apparently giving full co-operation.

with the LEEP lens systems, and that further research is
required. Virtuality had this to say about the subject:

The HMD has recently come under attack in the press and under research
by John Want and his colleagues at the University of Edinburgh, among others. Worries have been aired that the HMDs may well cause binocular stress on users' eyes and cause nausea and headaches, among other symptoms.
After setting up a test involving 20 young adults seated on a "tethered" cycle and asked to ride round a virtual landscape with signs, buildings and bridges, over half the subjects reported blurred vision and one individual's eyes took 40 minutes to return to their normal state.

The equipment they tested was the VPL LX Eyephone with Fresnel lens which was regarded by many VR companies as a poor comparison to their own hardware. Nan also claims that the similar problems have arisen
ket. The deal is to produce a high performance virtual reality game which, in the words of the ever-modest John Waldren, will be "a landmark within the arcade entertainment field".

To top all of this, the company was recently floated on the stock market and fetched $£ 10$ million from the newly acquired shareholders with premiums at 73 p on the first day.

You may be wondering what kind of
machine it takes to run the future of entertainment as we know it. It's none other than an Amiga. Although stuffed to the brim with graphics cards and boards introducing processing technology many times in excess of the basic unit, it's still a Commodore at heart...

With Virtuality Group ple's financial holdings well and truly anchored, how does John Waldren see VR's future?
"We envisage the technology becom-
ing significantly lighter and less cumae some. In terms of the most imports aspect, that of the software develop at the moment entertainment applicas and other VR applications are very cram
"As we speak, these are becoming | more sophisticated in their comple and in their usability. It is critical environments are both compelling highly enjoyable, but at the same immediate and uncluttered by techno

From the actual reality of driving around Nottingham hopelessly lost to the virtual reality of a Gladiators match gone horribly wrong, where this humble reporter was fumed into a bloodthirsty, rampaging robot, is an example of the pure escapism VR offers.

Laserquest in Nottingham is one of a chain of nationwide sites boasting an extensive range of VR games. Started nearly two years ago, the leisure complex has gone from strength to strength and now has four fully operational VR pods with a mere accumulative cost of $£ 100,000$.

On entering the premises, you'd expect to see some huge towering piece of equipment to justify the price but in fact, after having a good look around, my eyes finally stumbled across a television, four Amigas with accessories and four hollow artificial tree stumps in which the players stand wearing the VR headgear and clutching their joysticks.

Before testing the alien-looking equipment, I asked VR and laser quest marshal Paul Shelton his opinions on virtual reality:

## How are people reacting to VR?

"It's been a positive response from the Laserquest players; the general public really enjoy playing as well. It's ideal for corporate events where there's a real sense of who can outwit level 6 of Legend Quest or beat the alien in Grid Warriors."

What do you think of the possible side effects of VR such as eyestrain?
"I've been playing virtual reality for nearly a year now

## At the arcades


since it's been down here, sometimes playing games like Gridbusters two or three times a day and have had no problem. Another guy has been using it for two years and is perfectly fine. We've never had any complaints..."

## What do you expect to see over the next few months?

 "Over the space of six months [since]... Combat Zone was released to the latest one, Gridbusters, [they've added] digitised photographs and a totally interactive soundtrack which adjusts to the player's situation, telling you where to go and what to look at."I can see that side developing first and the graphic capabilities afterwards. In the future, I can see virtual reality rivalling the arcades."

This may all sound very enticing, but what about the actual prices of playing in gamer heaven? For the addicfive players among you, it'll cost $£ 120$ for an eight-hour


Dungeons, dragons and team work in this, the most interactive of all the virtual reality games so far...
session on Legend Quest down to a more reasonil $£ 4.50$ for 15 minutes.

For the same amount of money, the time allow fluctuates on different games. It may sound a little on dear side but with member and guest lists of well s 7,000 customers, virtual reality seems to have mas solid impact on the arcade-playing public already.

So what are the actual games like and are they the money? While Dactyl Nightmare and Gridbustern reasonable titles, Legend Quest is by far the : example, really showing what virtual reality is capabit It takes the cliched format of an adventure set in geons where you, the player, may select to be eft dwarf, an elf, or - if you're in a really daring mood human. Choose a profession - fighter, thief or magic

## VIRTUAL REALITYE

" apects of primitive software interfaces." While Virtuality's main field is in enternemt, they are also placing a firm investnert in many other areas of development.
lacluded in these is "edutainment", a are of education and entertainment where VR is already being used in the bagn of experiences which depict the as related to an environmental type of mulation.

## RECONSTRUCTED

In the future, imagine a classroom withtart the need for a blackboard and a high triocity chunk of chalk where the pupil Tins in, sits down, puts on VR glasses and -uht at first hand about the battle of Sisworth or watches the siege of Leningrad instructed in a virtual world. These sys--s are also planned to be used in universiand museums and again offer a

potentially excellent learning experience? Finally, for those of us wishing to have a virtual world in our own front room, a home-based virtual reality kit is been dis-


A Division-
produced game designed specifically for the recent SIGGRAPH show in America
cussed with several manufacturers, for joint development of the computer gamer's dream.

Another British company doing financially well both at home and abroad is Division. Founded in 1989, their specialisation is in applications such as com-puter-aided design, molecular modelling, telepresence and simulation.

Last October, Volvo demonstrated their Division-designed Virtual Reality Crash Simulator where the user is able to experience a 25 mph side impact and walk away unharmed. Charles Grimsdale, MD of the company said: "A full scale 3D model of the car can provide invaluable insights into both ergonomics and aesthetics of design."

In the Netherlands, virtual reality has been used to show houses which have not yet been built. Prospective purchasers


Cridbusters -a frenzied gladiatorial game set in the future


One of Virtuality's games, Aying Aces, is played in the sit down pods, the sDI000...


Watch your back and shoot the opposition in one of the first VR games

were able to walk through and see their future homes, and during the two days that the VR system was in use, more houses were sold than in any previous two-day period.

Clive Jones of Division said: "...if you look at some of the ways [virtual reality] is going to help people interface with computers and some of the ways in which it's going to allow multimedia to come to life which it hasn't done before, it's more than just another step - it's quite a radical improvement."

## LEISURE

Stateside, where things move faster and cost more, companies like Evans and Sutherland - the makers of military and scientific simulations for industry - have decided to turn their talents to the entertainment sector.

Unlike Virtuality and Division, whose philosophies are to make VR as affordable as possible for the mass market, E\&S have pulled out all the stops and created Virtual Adventures for a bargain basement price tag of $\$ 1$ million each, to be
installed in major theme parks in 1994.
The company's idea is to move away from the HMD and into a more sociable and interactive environment where a group of people work together to win the game.

Their first product is a game where a team must work together to save the Loch Ness monster using a vehicle containing six people performing different tasks one pilot, a navigator and robot arm operator among others.

At the recent SIGGRAPH show in America, the world's largest computer graphics get-together, Evans and Sutherland stole the event with their breathtaking virtual reality hang-glider ride which allows two participants to fly simultaneously through separate urban landscapes. Even though this was put together purely for the show, E\&S have plans to produce a line of machines for under $\$ 100,000$ each.

While there are only a handful of companies through out the world in VR production, many other industries are becoming increasingly interested in the

## Exhibitions in VR

Imagine a system that combines virtual reality, video and sound, all squeezed into a virtual environment displaying 24 exhibits in space that normally only fits one. The Virtual Exhibition System (VES) is the brainchild of Perry Hubber, a designer working for design company Faberushi.

It's a multimedia experience in the true sense of the word, where the user is able to move via a custom controller called a Spaceball through a virtual exhibition. A series of computers are lined up which, when approached, play a short video clip describing the particular project.
"VES helps make virtual reality a more usable and accessible technology," Huber says. "For the first time, many companies can see the potential benefits of VR, and more importantly, can afford to use them."

While using a non-immersive VGA monitor, Huber opted for an Amiga 1500 fitted with an accelerator card, connected to a Laserdisc player. He intends to upgrade to a Motorola 68040 -based Amiga 4000 in the future. My, my, that Commodore machine gets everywhere.
uses for this new medium.
According to America's Ben Delany, editor of the CyberEdge Journal (a paper specialising in all things cyberspace and virtual), among many of the proposed applications is telepresence where instead of a human going into a potential lethal situation such as a massive fire in a petroleum refinery or a meltdown in a nuclear plant, a remote-controlled robot is sent in operated by a person wearing a data suit which causes the machine to mimic their actions.

VR's uses spread as far as psychology where patients will be able to talk to an unassuming virtual therapist controlled by people out of sight - potentially useful in dealing with highly disturbed children.

## GENETIC

Other more controversial VR techniques will be in genetic engineering where the engineer will move about in the fish-tank-like setting of a virtual cell, grabbing and moving organelles at will. At the same time, laser cytometres will be performing the actual manipulations on real, living cells, copying the actions of the operator.

You may have read articles and press releases about virtual reality before and grown tired of the endless stream of hyperbole: "It's the dawning of a new age,"... "The world will never be the same again,"... "It's not life as we know it, Jim," to the other extreme: "It'll destroy society, crush the souls of children, annihilate human communication..."

Although the above comments are on the extreme side, whatever VR is capable of, it is up to the people who develop and use it to make sure that this powerful medium that's coming of age is used responsibly and creatively.

While virtual reality may be just another step in technology's evolutionary ladder, the signs are that this is no flash-
in-the-pan craze, and that we'll be seeing more of VR in the months and years to come.

In the words of Clive Jones at Division questioned on the future of virtual reality "Has it reached the unstoppable roll? Its very, very close to it."

## Special thanks

Parallelogram magazine
Dr Brian Collins, IBM UK Scientific Centre (Dresden)

Further reading:

## Mondo 2000

CyberEdge Journal
Virtual Reality by Howard Rheingold

## Further vieming

Brainstorm - The first and so far best VR film made starring Christopher Walken as the scientist tapping into the human mind to create the ultimate sensory experience.

The Lawnmower Man - A very weak, limping plot just held together by the superb VR sequences created by Angel Studios.

Emmanuelle's Seventh Heaven Another chance for the porno industry to sink their teeth into something new. Emmanuelle conducts sex therapy through the use of virtual reality in this soft porn flick.

Cyberzone, BBC2 - Craig Charles desperately tries to make this VR cat ' $n$ ' mouse game interesting but there's no doubt that it's just a little tedious when viewing. Worth watching if only to see virtual reality in action.



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0ne of the great things about the Amiga is its ability to use sampled sounds; you only have to listen to a typical game or demo to hear what can be achieved.

Sound sampling, for those of you who are new to such things, involves a rather strange translation process whereby recorded sounds are converted into sets of numbers.

In most cases this is achieved by plugging a box called a sampler or sound digitiser into the Amiga's parallel port, connecting a sound source (microphone, CD player and so on) to it, and then using a piece of software to collect and save the digitised sound.

Reasonable hardware and software can be obtained quite cheaply and although getting good results may take a little practice, the sampling process itself is easy to perform.

Now you certainly don't need to be technically minded to benefit from the Amiga's sound sampling facilities, but most users do seem to feel more comfortable with the jargon that they inevitably encounter in magazines and books if they know something about how digitisers work and how samples are stored. So, with this in mind, here's a more detailed overview of the sampling process.

A single musical note can be thought of as consisting of sound waves of a given pitch (frequency) and loudness (amplitude). When you listen to a piece of music, or anything else come to that, what you are listening to is a mass of these waves containing many different frequencies and amplitudes.

In making a tape recording of, say, a song, the intensities of each part of the waveform are continuously measured and stored (as varying strength magnetic information) on the tape. These types of continuous measurements are called "analogue" recording techniques and are so named because an ever-changing signal is being measured in a way that allows the full details of the input signal to be recorded (in theory at least).

Sound digitisers work on rather a different principle - they use special hardware which grabs and measures, ie samples, the input signal's amplitude information at specified intervals.

This usually happens many thousands of times a second and by storing the numerical values which represent the amplitude of the signal, a digital copy of the original sound is

built up. The key point to approach is that because the information ends up being stored as a series of numbers in memory it becomes amenable to processing by computer.

As sound editing is then reduced to just changing the numbers associated with the digitised waveform, it becomes possible to achieve effects which are either difficult or impossible to produce with conventional analogue recording techniques.
Needless to say, the quality of any sample depends on the accuracy of the digitisation process and one of the factors to consider here is the resolution of the numbers used to define the waveform amplitude - it should be pretty obvious that sample quality is going to be dependent on the range of numbers used to represent the amplitude measurements.

## EIGHT-BIT

The Amiga's internal sound chips are based on the use of 8-bit sound samples and this is why most Amiga samplers perform amplitude digitisation to an accuracy of 8 bits (this means that the numerical amplitude values found in the stored sound sample data lie in the range -128 to +127 ).
Although the Amiga's internal sound chips are quite impressive, this 8 -bit limitation does of course put a restriction on the playback quality that can be achieved when sounds are regenerated.

Compact discs, which incidentally also use this type of digitised sound technology, are rather better in this respect because they use a 16 -bit sampling amplitude resolution. This means that CD digitised data contains correspondingly more waveform detail (hence the playback sound quality is better).
Sixteen-bit samplers are available for the


[^3]

One of the many budget samplers that can produce very good results


> Exciting, yes, but you need to know the basics before plugging outside sounds into your Amiga. Paul Overaa explains why your Amiga and a CD player have a lot in common...

Amiga but, with one notable exception (namely Microdeal's Clarity 16), they're still relatively expensive. They also have another disadvantage - because each amplitude value uses 16 bits ( 2 bytes) instead of 8 bits ( 1 byte), they use up twice as much memory!

The sampling rate, ie the frequency at which signal measurements are taken, is the other factor which governs the resulting sample quality. Fast sampling rates would intuitively be expected to give better waveform detail and this is exactly what is found in practice.

Amiga digitisers are very respectable in this respect. Microdeal's Megalosound sampler, for instance, can collect mono samples at rates of 40 to 70 kHz and even stereo samples can be collected at rates of 34 to 39 kHz .

The relation between sampling rate and playback rate is quite easy to understand. If say you sample a musical note using a 20 kHz sampling frequency, and then play that sample back using the same frequency, the digital copy of the note will sound the same as the original because you're reconstructing the waveform in the same time space.

If however you double the playback
speed then you are effectively doubling the frequency of all of the elements in the waveform and since a doubling of frequency means an increase of one octave in pitch, the digitally recorded sound will end up sounding an octave higher. Half the playback frequency and the note will sound an octave lower, and so on.

## DIRECT-TO-DISK

Amiga chip memory is always at a premium and since most samplers use this memory as their sample workspace, this places a limit on the size of the sample that can be taken. Some of the expensive 16 -bit samplers solve this limitation by offering direct-to-hard-disk sample taking and this facility has recently filtered down to more affordable digitisers as well.
The hardware performance of direct-todisk units tend to vary according to the efficiency of the hard disk being used but, by way of example, the Megalosound unit can often achieve speeds of around 18 kHz when recording stereo samples in this way.
Irrespective of whatever sampling hardware you choose, or can afford, to buy, there are some general guidelines to bear in mind.

Firstly, none of these units can work mirades and if the signal fed into the digitiser is poor then you can bet your bottom dollar that the results are going to be equally poor. You can get great results from $C D$ decks, records and tape machines but if you want to use a microphone for recording voices and so on then a little more care is needed.

Microphones, such as the those provided with cheap portable tape machines, are best avoided (like the plague). If you need to sample microphone-based input then try and get hold of something decent (like an AKG, Shure, or Beyer) even if it means borrowing one from a rich friend!

One criteria used to measure the signal quality of hi-fi equipment and the like is something called the signal-to-noise (SNR) ratio. This basically gives a measure of the signal itself relative to any extraneous electrically generated background noise produced by the equipment.

Keeping tape heads and records clean, and using good quality connecting leads

(which should incidentally be as short as possible), can all help to improve the final quality of the audio signal.

Because it is important to provide the digitiser with a good strength signal, the sampling software will provide graphic
indicators which allow you to see whether a suitable signal level is being provided.

Too low and the sample will have a lot of background noise, too high and the digitiser's input circuitry won't be able to cope and you'll get a distortion effect known as

## Trouble shooter

With proper attention to input signal levels, and a decent original signal, very little can go wrong with your sample taking. There are however a couple of extra points worth mentioning.

To start with, dirty contacts on the audio lead that links the sound source to the digitiser can often result in poor sample quality. The remedy is to clean the jacks/phonosockets (loose connections cause similar problems and the solution should be pretty obvious).

Audio leads trailing near to a mains power cable are another thing to watch for - it is all too easy for mains-induced hum to be inadvertently picked up.

The moral here? Keep all audio leads away from cables that carry current and don't, incidentally, do silly things like draping audio leads over your monitor.

Not because it's particularly unsafe but because the high voltages inside the monitor can also result in the audio input cable picking up induced hum.

## The sound sampler

Sound samplers convert sound to a digitised form which can be stored and manipulated by a computer. Samplers rely on chips called analogue-to-digital converters (ADCs). These specialised chips sample analogue voltages and convert them into binary numbers which the computer can digest. Sound samplers usually operate at rates of up to 40,000 samples per second (sps) although sampling rates of 8,000 sps to 15,000 sps can be quite adequate. Control of the recording level or gain is very important. Some samplers control gain digitally on screen while others offer only hardware control.

The analogue-to-digital converter (ADC)
This is the heart of the sampler. The chip samples the analogue input at a controlled sample rate and measures the voltage variations at regularly spaced intervals, generating a list of binary numeric values which can be stored and manipulated by the computer.





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Trackers programs like OctaMED let you create you create your own
compositions compositions samples
clipping. For the best results, start with a sig nal that is a little too loud and experiment by sampling it, and listening to the results.
If on replay you hear any evidence of clipping, then reduce the volume slightly and try again. Repeat the process until you are convinced that you've recorded the strongest non-clipping signal possible. Some digitisers, incidentally, are fitted with volume controls. Others are not and in these latter cases the signal level will need to be adjusted directly from the audio source.
Collecting sound samples is great fun. It is, however, of little use unless those samples can be saved and re-used and herein lies another part of the sampling story.

The digital copy or image of the sound in memory is called the raw data and many sample editing packages offer facilities for writing this information directly to disk.

Raw files are used mainly by programmers - a games coder for instance might use raw sound sample data and embed the required details of playback rates and the like, within the program using the sound.

As a means of creating portable data files, ie sound sample files that can be used with any number of different sound editing programs or tracker programs, raw sample files are less than ideal. This is because a program reading such raw sample data is not going to know how the waveform should be played back or used.

What is needed therefore is a file format that saves not only the waveform data, but some details about how the sample should be played and this is where the IFF 8SVX file format comes to the rescue.

IFF files store their data items in labelled blocks (called chunks). With 8 -bit sound samples the chunks, since they represent 8 bit Sampled Voice data, are known as 8SVX chunks and these will contains the raw waveform data, details about how the sample should be played, plus perhaps other info as well. A simple 8SVX file might, conceptually look something like this:

##  vavefore data)

The IFF format allows a number of different waveforms to be stored together, including a one-shot sample which is a waveform that is intended to be played once at some nominal playback rate. The file may also include a
repeat part waveform. The idea here is that when samples are played as musical instruments, the programs using them can initially play the one-shot part of the waveform, and then loop around the repeat part of the waveform for as long as the sound needs to be sustained.

Programs which use sampled sounds as instruments achieve different notes in a particular voice by modifying the rate at which they play back the sound sample.

Samples however always sound best, or at least most natural, when they are played back at rates near to their original sampling rate and with large alterations in playback rates the quality of the voice can often deteriorate drastically.

## MULTIPLE

The IFF standard helps programs to avoid these sorts of problems by allowing multiple octave sound data to be stored so that in any given situation a program can choose an octave nearest to the note that it wishes to generate. Three and five octave 8 SVX file versions are common.

IFF 8 SVX is fine as an 8 -bit standard but over the last few years a more sophisticated file standard has been created that will become increasingly important as 16 -bit sampling becomes more accessible.

It's called Audio IFF and one of the packages which supports this format is Microdeal's Clarity 16. The AVR format, an in-house standard created by Audio Visual Research, is another 16 -bit arrangement that you may also read about.

AVR files consist of a small block of header information followed by the sample waveform data. There are incidentally a
number of Midi-oriented sound sample file formats also available but these are really only of interest to professional users.

By virtue of the way they are obtained, digitised samples are of necessity both time quantised and limited to discrete steps in amplitude.

The world of mathematics has provided us with something called the Nyquist theorem which essentially says that a continuous time waveform, when sampled at a frequency greater than twice the maximum frequency component in its spectrum, can be reconstructed completely from the sampled waveform.

Now in theory you can use these ideas to predict suitable sampling rates when taking

## Let your ears be judge and jury and you won't <br> go far wrong

samples of a particular musical note (if for instance you are sampling a sound with a frequency of 15 kHz , this theory suggests that you'd need to collect data at a frequency of at least twice this, ie 30 kHz to get a good sample).

In practice things are not that simple because musical instruments produce notes which contain other frequencies, called harmonic overtones, which colour the sounds. These harmonics may include frequencies which are at a much higher frequency than the main note.

If the Nyquist relationship tells you anything at all it is that a sampling frequency at least twice as fast as the frequency of the highest frequency component present in the original waveform needs to be used.

Since you'll never know the frequency of the harmonics any chance of making sound predictions (apologies for the pun) of suitable sampling rates go out of the window! The solution of course is to forget any "I can calculate the required frequency" ideas and let your ears tell you whether you have a good sample or not.

Samples can incidentally suffer from a waveform distortion known as aliasing when taken at sampling rates of less than the Nyquist predicted frequency and the Amiga


This highly sophisticated automated composition program from Blue Ribbon Soundworks
uses sampled sounds for its instruments

## Jargon buster

chip memory The area of memory that is accessible by the Amiga's custom chip set. Sound samples have to be held in chip memory in order to be used.
clipping When a signal is provided that is too loud for the digitiser circuitry to cope with, the top parts of the input signal waveform can be effectively chopped off or clipped. This produces a distortion which, for obvious reasons, is called clipping!
hertz The hertz is the common unit of frequency equivalent to one cycle per second, so $1 \mathrm{kHz}=1,000$ cycles per second.

RAM scanning A facility provided by some sampling software whereby you can hunt around the Amiga's memory and "play" whatever's there. Neediess to say nobody ever uses these options for stealing other peoples samples!
tracker programs These are sequencer-type programs that are based on the use of sampled sounds. OctaMED Pro is a typical example and very good it is too.
is fitted with an anti-aliasing filter to minimise this effect.

Unfortunately this filter works by cutting the high-frequencies (because they're the ones most affected by aliasing distortion) so samples end up sounding flat (dull). Basically the sound loses its sparkle because it loses those all-important harmonics mentioned earlier!

Some sampling software can employ a playback technique known as oversampling which allows aliasing distortion to be reduced without cutting the high-frequency waveform components.

There is incidentally another source of distortion-based quality loss that is worth mentioning. Some software allows the IFF 8 SVX sample data to be compressed to save space.

Fibonacci-delta compression, the technique that is always used, is not really suitable for compressing musical instrument samples - it can, and usually does, introduce distortion that is especially noticeable on samples recorded at low sample rates. Sometimes you can get away with it but as before the only safe solution is to experiment and let your ear be the judge!

Developing an ear for music, being able to recognise a good sample from a bad one, and so on is something that only comes with practice. At the end of the day there is only one rule to apply to the samples you take - if it sounds good... then it is good. And if you let your ears be your judge and jury in this way you'll find that you won't go far wrong.


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A second floppy disk drive can revolutionise the way you use your Amiga. Phil Morse looks at the wide variety of models on the market
 this review rather pointloss. But while they all tend to use one of a ve
smail number of reliable, well tested and trusted actual drive mech nisms within their cases, the construction quality, software supplied and extra to tures are all up to the particular manulacturer.

Actually, there are a couple of types of drive, alhough for the Amiga only ce kind is really viable unless you require one for speciallst use, and this is the h floppy drive format. HD stands for high density, which means the disk can ho around sook of intormation as opposed to roughty halt of that using old (now ofe dated) variants.

As well as HD disks, it is also possible to buy DD (double density) variants These can record roughly double that of HD disks, and use much higher qual magnette coatings on the oflsk' surteces to record accurately such a targe amod of information.

We have tested one such model, the Power XL. drive. Such drives are great fo


## Power PC883 Dual

## Power Computing

This is a novel concept, and one which will appeal to those who want two instead of just one extra drive, but who wish to keep everything nice and tidy. The Power Dual is two fully-featured Power disk drives in one neat metal case.
Each drive is in actual fact a completely independent unit, so you can copy from one to the other, the Amiga recognises them both icon-wise as two separate units, and so on.
Switched on via the switch on its rear, the unit is actually powered by its own minitransformer mains power supply. This is to reduce any strain on overworked power supplies, and is only to be welcomed. It's a common misconception that power supplies last forever..

The Dual Drive comes complete with Blitz software, too (see box), and can - indeed, must make two copies of anything you're backing up from the Amiga's internal drive in order to make it work.

It's novel and very neat. While it may never be a best seller, there are many circumstances where two disk drives in one neat box could be a perfect solution, and if it such with you, this is a first rate model.


## Power XI.

## Power Computing

Sharing the same sleek looks as the 880 B except for a slightly darker shade of grey used for the front plastic casing of the drive itself, this drive is different in that it can handle high density disks, known as HD disks for short. As mentioned, these allow you to format the special HD disks to hold a maximum capacity of around 1.6 Mb - double that of usual DD disks, and so especially useful for those wishing to cram a large amount of data onto a single disk.

Therefore this drive appeals to those using their Amigas for DTP or animation and graphics work, where the disks can hold more pages, frames or pictures than their lower capacity counterparts.

Visually, the only difference on the disks themselves (discounting the HD logo) is a second hole opposite the write-enable/disable slot. This hole is a permanent one, and using it the disk drive senses whether the disk which has just been inserted is HD or DD. Therefore, the Power XL drive is able to read, write and format both types of disk the best of both worlds.

The drive has four rubber feet which hold it very still, and the usual enable/disable switch and daisy-chaining socket on the back. So if big files or programs are your thing - or if you're putting off getting that hard disk yet wish you could have a second drive stacked with all the things you need to keep swapping disks for - this could be the one for you.


I could have called them "viri", but then you wouldn't have known what I meant, would you? However you pluralise them, viruses - nasty little computer programs which can do everything from locking up your machine to flashing "amusing" messages at you to reformatting your hard drive - are highly undesirable.

Disk drives which contain anti-virus circuitry allow reading and writing to and from Amiga disks as usual, but will block any attempts to write to the bootblock of any disks in either the external drive or the Amiga's own internal one.

As most viruses work by bootblock corruption, this is an effective aid in the fight against them, although it should not be used instead of a proprietary virus kilter - such circuitry can't do anything about already affected disks.

Unfortunately, the so-called "link" viruses are immune to this kind of protecHon as they work in a completely different way. Link viruses are generally far more serious than their bootblock contemporaries, doing such desirable things as complete disk wipes (hard as well as soft), so it is doubly essential to make sure that you scan all new disks with that up-to-date virus killer.

## Beating viruses

$\qquad$

## Powner PC880B Powner Computing

The Power drive is a long beast, but is nevertheless streamlined and goodlooking in its plastic and metal casing. It bears a great resemblance to its cousin, the Power XL high density drive, brought about by being sold in the same casing.

The PC880B has an isolating switch which makes it effectively "disappear" when switched off, allowing compatibility with extra-drive-sensitive software, and also comes with the usual through-port for connecting a second drive to.

Power recommend that you do not connect more than two drives together running off the Amiga's own power supply - although this advice may vary depending upon what machine and so what type of power supply you have, Power's suggestion is a sensible rule of thumb.

One feature which particularly impressed me was the inclusion of an anti-click device which effectively stops the drive clicking periodically the bane of the Amiga's internal drive.

It's a problem caused by the Amiga continually checking to see if a disk has been inserted in the drive, and one which users have previously got around by either putting a "dummy" disk in the drive (so there is one there and so no need to click) or by using a small PD utility permanently installed and programmed to stop it. Power's solution is both transparent and effective.

What makes Power's drive stand apart from the crowd, however, is its Blitz software, which is included with the drive in the shape of a floppy disk, and an extra switch on the back of the unit. The function switch can select one of three options. The first is Normal. The second is an anti-virus setting, which is discussed in more detall in the separate box.

The final setting, Blitz, is for use in conjunction with the aforementioned software. See the box-out "Blitz those disks" for more information on this feature.

## Cumana CAX354

## Cumana Ltel

Definitely the grandad of the Amiga external floppy drive world, the Cumana has been around for many years. Looking rather old fashioned in this day and age - it's slightly bigger and clumsier looking than its competitors, and its noisiness betrays a rather basic
 design - the Cumana has nevertheless lived a long and popular life which sees no sign of decline.

Maybe people like it because of its reliability. Eschewing flashiness and fashion, the Cumana is one of the most trustworthy drives in the business.

It comes in a two-part moulded plastic case, complete with an extra port on the back for daisy-chaining another drive. It has four small plastic feet, which are not particularly brilliant at holding it still. Indeed, our office Cumana (pictured) has been doctored with six large rubber feet and now looks somewhat like the souped-up Morris Minor of the floppy disk world! But it's testament to the unit's reliability that no-one can remember how long we've had this particular specimen. Devoid of gadgets and extras, this is the drive for you if you're after something tried and tested and through with flying colours.

## Roctec Rochite <br> Gordon Harwood

A very popular drive with the trendy, streamlined mob, and not too surprising either, as the Roctec's sleek metal case certainly conjures up elegant adjectives such as "diminutive" and "understated".

Although its design is compact, it lacks the spilt-coffee-unfriendly top vents of its streamlined contemporary the Zappo drive. On the Zappo model, vents appear to be a design feature designed to keep the drive mechanism cool within such a small case, but the Roctec does not appear to get hot in use without them.

It is equipped with the usual enable/disable switch and socket for daisy-chaining other drives to, although you may have to search for a trendy-looking 23 -pin cable to connect them up with or the plug in the back might ruin this vain little number's good tooks!

It also has, rather more usefully, an anti-virus facility along the lines of the power drives (see box for an explanation) which is only to be welcomed and perhaps pushed this model a littie ahead of the Zappo in the sleek desirability stakes.


## Zарро RF332C Indi Direct/Hobbyte

This is a highly attractive drive, and for those with fashion-conscious Amiga setups, it could be right up your street. Extremely slimline, both in height and length, it comes in as sturdy grey metal casing, which is finished in an attractive speckled pattern, and has the usual 23 pin D-plug for attachment to your Amiga, and a D-socket on the rear for attaching further drive/s.
Possibly the only worrying factor about this attractive design is the use of two cooling vents on the top of the unit towards the rear. While no doubt essential for the cool and proper running of the Zappo, these vents nevertheless are prime target for any stray cups of coffee or small objects in the curious paws of young children...

No doubt the trendy, streamlined design of the drive is the reason these vents are necessary, so if you want small size and looks, just be extra careful with drinks and children.

Finally, the drive has a small on/off toggle switch at the back to deactivate it when its use is interfering with software. Like most of the drives reviewed here, the Zappo has not got a power supply of its own, but if my humble A600's power supply can happily feed it, then I imagine it will be all right on all Amigas.

## Addresses

Cumana Ltd, Pines Trading Estate, Broad Street, Guildford GU3 3BH
Tel 0483503121 / fax 0483451371
Gordon Harwood, New Street, Alfreton, Derbyshire DE5 7BP Tel 0773 836781/fax 0773831040

Hobbyte, 10 Market Place, St Albans AL3 5DG Tel 0727856005

Indi Direct Mail, 1 Ringway Industrial Estate, Eastern Avenue, Lichfield WS13 7SF Tel 0543 419999/fax 0543418079

Power Computing, Unit 8 Railton Road, Woburn Road Industrial Estate, Kempston MK42 7PN Tel 0234843388

|  | Power supply | Daisy-chain | Enable/disable | $\mathrm{HD}^{\prime}$ | $\mathrm{DD}^{2}$ | Casing | Anti-virus | Cost | Suppliers |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Cumana CAX354 | No | Yes | Yes | No | Yes | Plastic | No | £49.95 | Cumana Limited |
| Power PC880B | No | Yes | Yes | No | Yes | Metal/plastic | Yes | $£ 60$ | Power Computing |
| Power PC883 Dual | Yes ${ }^{3}$ | Yes | Yes | No | Yes | Metal | Yes | £125 | Power Computing |
| Power XL | No | Yes | Yes | Yes | Yes | Metal/plastic | Yes | £99.95 | Power Computing |
| Roctec RocLite | No | Yes | Yes | No | Yes | Metal | Yes | £59.95 | Gordon Harwood |
| Zappo drive | No | Yes | Yes | No | Yes | Metal | No | £51.50 | Indi Direct Mail/Hobbyte |

${ }^{1}$ Handles high density ( 880 k ) disks ${ }^{2}$ Handles double density ( 1.76 Mb ) disks ${ }^{3}$ Comes complete with own separate transformer/power lead and plug


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-
 - you how to type special characters. System Mover, to make moving fonts and system files a snap. And Brain Cloud, which can protect yout disks from accidental use by others.

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Quarterback Tools Deluxe is the most advanced disk recovery and file management package available for the Amiga, and the one program no Amiga user can afford to be without!
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## Quarterback Tools

- Scans disks for a wide range of problems and repairs them automatically.
- Finds bad blocks on a disk and hides them from AmigaDOS.
- Searches for and recovers accidentally deleted files.
- Salvages files from badly damaged disks.
- Defragments files for optimized disk performance.
- Includes an advanced disk sector editor, for direct access to data on disk.
- Full macro and AREXX support.
- Full AmigaDOS 2.0 and 3.0 compatibility, including support for both hard and soft links.


## Replicator

- Quickly makes multiple copies of floppy disks.
- Creates disk images and saves as AmigaDOS files.


## Locator

- Searches disks for files that partially or fully match specified names.
- Displays location of files, information about files, and file contents.


## Encryptor

- Encrypts and decrypts files to prevent unauthorized access.
- File decryption is password protected.


## File Eraser

- Completely erases and deletes files to make their contents unrecoverable.
- Uses standard or US Government erasure methods.


## Disk Eraser

- Completely erases all traces of just deleted files, or of all files on a disk.
- Uses standard or US Government erasure methods.


## Keystroke Finder

- Displays keystrokes necessary to generate any character.


## System Mover

- Quickly and easily moves fonts, printer drivers, and system files between disks.
- Displays version information for printer drivers and system files.


## Brain Cloud

- Makes a floppy disk unaccessible to AmigaDOS.
- Not even the Amiga's "Format" command will work on a disk with a "Brain Cloud"!


## General

- Workbench 2.0 style "3-D" user interface.
- Requires Kickstart 1.2 or later (Kickstart 2.0 or later recommended).

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French ${ }^{\alpha}$
For children 6 to 16 years This suite of six educational games will
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the French language.


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## Dinosaurs

## For all ages

This package is the fun way to lean the truth about dinosaurs. The six games all have superb digitised graphics to make a whole area of history - dinosaurs - come alive If you came face to face with a tyrannosaurus would you run away Or are you safe because it's a vegetarian and wouldnt eat you This, together with 100 s of other interesting lacts, can be discovered
from this enithraling package. from this enithraling package.
The six games - all with single and mult-player options - are educational fun for everyone.


## English

For children 6 to 16 years
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- PC Home (November 93)

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## For all drivers and learners

 Whether you're a novice learner or an advanced expert, there's plenty you can learn from this package. There are thousands of built-in questions and you can choose whether you want to answer them directly or add to the fun by trying them within games.The six games have been designed to be fun for all aduits and include strategy, mental agility, coordination and more. And, it you think you are up to it, you can take the tesf - a challenge covering many areas of


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# Promises, promises! <br> I'm fairly new to the Amiga, but having worked in the PC 

 retailing business for a while I know a couple of people in the industry and so can usually pick up a lot of gossip about other machines. Specifically, I've been hearing a couple of worrying things about Commodore.Is it true that they won't be releasing the A1200 CD-ROM drive this side of Christmas? A friend assures me that though Commodore promised it would be available, it now won't be appearing until Commodore can get the price right.
Is it also true that virtually none of the games houses will be living up to the promises they made when the CD32 was launched? In other words, I hear that few of them will be releasing A1200-specific games this year, never mind CD32 games.

Now my main point. Why make a promise when you have no chance or no intention of keeping it? All this sort of hype and lying in the computer industry serves only 5 confuse and annoy the customers, and as someone who's spent three years dealing with computer buyers I can tell you that when confused and annoyed by a product they just drop it and run.
If the games industry and Commodore themselves carry on being overly optimistic, Hey'll do more damage than if they had just said "not for a while yet" when asked to name a release date.

Peter Cowdry, Middlesborough
$\Gamma \mathrm{m}$ not sure where you're hearing your rumours, but they are at least partily true. Most soffaure companies who announced products at the time of the CD32 launch are missing the lunch dates they set themselves and Commodore still haven't confirmed the launch of the CD atifon drive.
Don't despair, though, as software houses continually miss their deadlines and expected release dates, and Commodore are holding back all other projects to concentrate on making and selling the A4000, A1200, and CD32 over Christmas. The fact that a few games are late shouldn't be too alarming.

You are right to be irritated by over-optimism, and companies have certainly been guilty of this in the past, but remember that a lot can come down to the expectations of the industry itself, the press, and the public.
If we all expect and demand that so many games are relensed on the CD32 before Christmas, Commodore and the games houses will endeavour to give them to us.
If this means they strain the boundaries of what can realistically be expected, are they lying or telling us what we want and demand to hear?


## Impossible upgrade

Will there ever be an upgrade kit for the A500 to make it into an A1200? There was the ECS chip set upgrade and Kickstart 2.04 chip to make it into an A500 Plus, so why not another jump up the ladder?

I don't want to get rid of my beloved A500 if I can avoid it, as I have too many peripherals which use the DMA slot. These would be useless on the A1200 unless someone was to produce an adaptor. Any chance of this?

Colin McGrain, Aberdeen
I'm afraid there's no chance of an A500 to A1200 conversion kit as it would proba-
bly cost more than a new A1200. Your idea for a converter to enable the A1200 to use A500 DMA slot peripherals is an interesting one, though.

This should be possible, but no third-party manufacturer has as yet announced plans for this sort of add-on, so we'll just have to wait and see.

There must surely be a market for an A1200 DMA slot, as the number of upgrading A500 owners in a similar predicament to yours must be substantial.

## Wrong balance?

I've been reading your magazine for years now, but I'm not sure how much longer I'll bother. The standard of the magazine hasn't fallen, but the content has.

You used to cover a good mixture of topics every month, including general interest articles and just about every conceivable aspect of the Amiga was

## Cream crackered Amiga

I hate cream crackers, I really do. Apart from the fact that they always fall apart when you try to butter them and they stick to the roof of your mouth, their butter-smeared flakes are a hell of a job to clean off floppy disks.

I hate four year-old sprogs playing with my disks even more. "OK son, just leave my disks alone or you'll break them. Where's the rest of your cream cracker, the bit you haven't spread all over my disks?"

The next day I found the soggy cracker when I tried to load a game into my Amiga. Yep, you could say the disk drive was literally cream crackered.

The guilty party was confronted with the evidence. "But son, why did you do it?" I asked. "Well," came the reply, "it's the same shape and it did fit." Huh! Anything fits if it's covered in butter, I muttered.

Mother acts for the defence: "Well if you won't let your kids play with real disks, what else can they play on the Amiga with?" Good grief!

I really do hate cream crackers.

## Steve Clarke, Kempston

You have to look on the bright side when this sort of thing happens. I mean, it could have been a chocolate digestive.

Seriously, though, try cleaning the drive thoroughly and see if it isn't still working. Cream crackers are messy, but not particularly metallic, and the drive mechanism may not have been damaged.

There's a good chance the head's have been badly affected, but you can always try before spending money on a replacement drive.
covered in some review or other.
These days there are fewer articles and you seem to concentrate on graphics and video to the exclusion of all else. Please address this imbalance before I am forced to stop buying a magazine I have always loved.

James Pitt, Wellington, New Zealand
Your concern has been noted and we acknowledge there have been fewer general interest articles of late, but you may have noticed the balance already changing.

We have continued to offer at least one round-up and one survival guide to an area of Amiga technology every month, and in future we will be putting more emphasis on the "How 2" type of article, such as last month's "How 2 fit an A1200 hard drive".

General interest features are back on the agenda, as you'll have noticed from our pieces on the Zoom Theatre Company, hackers, and virtual reality, but you can't criticise our reviews of graphics and video products as these are by far the biggest part of the new peripherals market.

If the majority of new peripherals were samplers and other Midi equipment, we'd be reviewing these, and no doubt attracting flak

Exra Surf's
Posthag
$K_{\text {spos }}$

## Indie sinks on HD

Our family bought an A1200 for Christmas last year and we've been reasonably happy with it. The first game we bought, Indiana Jones and the Fate of Atlantis, was a brute to play on a single floppy drive machine, and I promised my ten-yearold a revelation when we fitted a hard drive this week.

Revelation right enough - the bloody thing won't run on a 120 Mb hard drive. According to the man at US Gold there have been a tot of problems with larger drives, which apparently spin too fast for Indie. He admitted the game hadn't been tested for the A1200 before it was released and it was too late to do anything about it now.

OK, that's fair enough as far as it goes. You can't expect total compatibility in the surge for better technology, but I do feel it's grossly unfair that in the ten months I've owned Indie not one magazine, retailer, software house, or individual has made it known that a $£ 250$ hard drive and a £38 game are incompatible.

US Gold admit they ve had a number of calls trom people like me, so why has this been kept such a big secret? Like your reader Nigel Spence (ESP, June), I shan't be buying any more high-priced games that don't run on the A1200.

Bill Mackintosh, Glasgow
The reason we didn't make it known was that we didn't know of the problem ourselves. Our review of Indie was carried out on an A1200 with somb hard drive, so we had no problems with hard drive use and assumed this would be the same no matter what size the drive was.

US Gold should not be making excuses for their game, because the A1200 hard drive interface is the same as the A600's, and this was most certainly available during testing. It was also their responsibility to tell the magazines or, better still, the public by making known any problems with particular machine configurations.

## Accounts quest

I am writing in the hope that you or your readers may be able to assist me. Before a three year stint in New Zealand in 1990, I purchased the program Personal Accounts Plus by Equinox Business Systems Ltd from a local computer store, but having now returned to the UK I find that I've lost the manual.
I have made enquiries at the store where I bought the program only to find that the company went bust in 1991 and they have no idea where I could obtain a copy of the manual. Can you help?

CP Brown, Orpington
I haven't been able to locate a company still selling the package you mention, but I'm sure one of our readers must have a copy or know someone who does, and they may be willing to part with the manual at a suitable second hand price.

Try our classified ads section, or alternatively watch these pages in case on of our readers can help you out.
from those who don't like Midi stuff. Sorry, but in our reviews section we can only cover the peripherals the market sees fit to release.

Having said that, we hope you continue to find enough in Amiga Computing to carry on reading it.

## Warranty woes

Having just been reading issue 66 and noticed that ICL have been given the warranty contract for new machines, why can't existing owners have their warranties covered by them as well? Wang are still delaying repairs.

Three weeks ago my A1200 stopped working and was totally dead. On phoning the number on my warranty I was told that Wang would be in touch and fix it in six days. Many phone calls later I'm still waiting, having been told they're waiting for spares.

They said there was a new power pack and they were having difficulties getting one. Why is it I can buy one in the many adverts in your magazine and get it delivered the following day and yet Wang cannot?

I thought Commodore were improving their after sales service, but apparently not. If current Amiga owners cannot get the service they deserve, how do Commodore really expect to improve their market standing?

I owned an Amiga 500 for four years completely trouble free, but my A1200 is under three months old. Have they tested the so-called new technology or has quality control gone the same way as after sales service?

## B Howarth, Southport

The new technology in the A1200 is all silicon, and to be fair to Commodore's chip designers, we've never seen the AGA chip set fail. However, the secondary technology has produced a few villains, chief among which are the TV modulator, the power pack, and the floppy disk drive.

In the main, problems have usually been caused by the fact that cheaper components were used to cut costs, but there were also some early problems of the sort associated with any brand new production unit. There's Plus out of the water. brother machine. certain number of pages devoted to it every month?
Charles Taunton, Bridlington restricts coverage for the machine, but which is rapidly changing. recently, so there is no shortage on the software front. the drought won't last long. released.
person at the end of the phone isn't helping you, don't waste time arguing with them just get their name and demand to spouk ta the boss. Don't be put off with a vagut promise, but insist on the service to whicl you are entitled and for which you have paid.

## Road requests

After watching the Le Mans 24 hou race this year I just had to ask you the following three questions:

1. When Core Design released Jaguar XJ220 they stated that they were doing a 3D version concentrating on the Le Mans 24-hour race. Are they still making this?
2. Are the Papyrus Design Group still making a follow-up to the highly underrated Indianapolis 500? I prefer this to Microprose's Formula 1 GP, but only just.
3. Is Geoff Crammond going to do a sequel to Formula 1 GP? If so, I hope it will be harder as the original was too easy.

I would really appreciate answers to the above as I am a huge fan of 3D racing games/sims.

Jim Barnes, Southampton
Your questions were passed to the Gamer crew who, after a short conference, returned the following answers: No, no, and yes. In other words, forget about the 3D Le Mans game and the follow up to the excellent Indie 500, but look out for an improved version of F1GP.

In the meantime, Europress Software's RAC Rally game is shaping up nicely, though it remains to be seen how well they manage the Amiga version.

## A4000 corner?

I've recently bought an A4000/030 and to be frank I'm delighted with it. The extra power of the CPU, the graphics, and the superb Workbench 3.0 just blow my old A500

One thing I have noticed, though, is that the A4000 doesn't get nearly as much coverage as the A1200 and there seem to be far fewer round-ups of products for the big

Is there any possibility that you might start a column for the A4000 or at least have a

Yes, there are fewer pages devoted to the A4000 than the A1200 in most magazines, but there is a very good reason for this. There are far fewer A4000-specific products around, a situation which

As more A4000 peripherals come onto the market, they will be reviewed in this magazine, so keep reading. You should already have noticed the number of AGA software packages tested

As we go to print, a host of A4000 SCSI-II cards and other hardware is poised for launch, so
Relegating the $A 4000$ to a column of its own would probably only serve to marginalise its coverage, so we will continue to look for A4000 products and review them as and when they are


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## Hardivare

Tis was an exciting section, where tweral of the awards were decided by $a$ very tight margin. The closeness of Ta hardware votes shows just how vell the market has been served this par by manufacturers, with dozens of suality add-ons competing for our milets.
So, without further ado, let's look in tose envelopes..

Best video add-on
OpalVision, Centaur Software
Best hard drive A500 HD8+, GVP Inc

## Best RAM expansion <br> MBX1200, Microbotics Inc

## Best music add-on

Miracle keyboard, Mindscape International

## Best printer

Deskjet series, Hewlett Packard

## Best monitor

CM8833 Mk2, Phillips

## Best scanner

GT6500, Epson

> Who has won and who has lost in the Amiga Computing reader awards 1993? Will it be tears of joy, or fake congratulatory smiles for our nominees?

Acouple of months ago, we asked you to vote for the best hardware and software of 1993, and since then your votes have been flooding the $A C$ offices as thousands of ordinary readers take the opportunity to tell the manufacturers what they think.

The results are a reflection not only of our readers' preferences but of the relative strengths of the packages in the market. For example, the OpalVision card came out top of the video peripherals despite the fact that the video addon module has still not been released.

So many OpalVision users are out there that the card won by a streak, demonstrating that if Centaur could pull their fingers out with the upgrade modules, they still have a sizeable market.

Other results were a little more predictable, but all have one thing in common: They are the preferences and opinions of the voting (and paying) public and as such carry a lot more weight than press speculation.

## Games

This was a tough one, not only because there have been so many excellent games this year, but because people usually vote for their own particular favourite.

## Best arcade/ platform

Flashback, Delphine Software

## Best sports sim

F1 Grand Prix, Microprose

Best strategy/ war game
Civilization, Microprose

## Best adventure

Monkey Island 2, US Gold

## Best flight sim

Gunship 2000, Microprose
Well, that's that for another year You've voted with your wallets and your pens, and spoken as a group of readers of the only Amiga magazine to cater directly for the enthusiast. The responses given through your votes represent a group of dedicated Amiga users with a broad range of equipment, from RAM expansions to the most expensive peripherals around, and if you aren't a suitable peer group for judging Amiga products, then noone else can be.

## Best word processor

Wordworth 2, Digita International

## Best office package

Maxiplan 4, The Disc Company

## Sofitware

A quietish year for productivity software has seen the accolades go to mostly older established products, but the difference in voting behaviour between hardware and software is striking nonetheless. Not one of the final votes was close, and all winners cantered home at least a couple of lengths ahead.

Best art package
DPaint IV
Best DTP package
Final Copy II, SoftWood Inc

## Best language

Amos Pro, Europress Software

Best 3D package
Real 3D v2, Activa International

Best productivity package
Directory Opus, INOVAtronics

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## Mac transfer

ently looking for program like CrossDos that will allow me to transfer normal text between Amiga and Macintosh thed disks. It is very important that I
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there are any programs that are on
PD circuit, shareware, or even =ercial, can you please give me ails? Is it possible to configure mos and, if so, how?
own two versions of CrossDos, the ze on the Workbench disks and one en away on a magazine CoverDisk. setup consists of an Amiga 1200 with tord drive.

Ryan Morse, Milton Keynes
 Mac drives work in a very different way to Amiga drives, so the only way you can make your Amiga read Ix floppies is either to buy an emulator such
Emplant or the commercial program -. -2-Dos, which enables the connection of In atemal Macintosh floppy.
However, a Mac floppy drive will cost you ne Cl 100 , so why not just use CrossDos? The tacintosh can read PC disks, as can the Lrga, so to save a lot of money you could wt use 720 k MS-DOS disks as go-betweens.
If the Mac in question uses the System 6
crating system, it should have a utility
Ild Apple File Exchange, which is used to
-a and format PC disks or copy files to and fum them.
If the Mac has System 7, you can format C disks from the desktop, but make sure you this on the Mac as System 7 has a rrticular way of formatting the disks and -ll sometimes refuse to recognise a PC disk ter another machine.

## Bad sums



I have recently returned to the wonderful world of the Amiga home computer by purchasing in A1200 complete with 85 Mb hard drive. Up until yesterday things were going great but now I have a problem.

My hard disk is divided into two partiions, one which houses Workbench, alled System 3.0 , the other called Work which stores everything else. Whenever I click on the Work icon it opens OK, but also displays the following message:

SEKK has a CHECKSUR ERROR ON DISK BLOCK 90758
After cancelling the message the machine seems to perform the same as it did before the message started to appear. Please can you tell me what the error means and how to fix it?

Stephen Reid, Ellon

FA checksum is a number which is appended to a block of data on disk, and is the result of a standard calculation carried out on the data held in the Hock. This sum is used as a reference to check (geddit?) the data and make sure it isn't corrupt. The error message you have been

From viruses to thunderstorms, we've got answers to all your problems, natural or otherwise, from our team of experts

receiving merely tells you that a minor fault has developed with the data on one small part of your hard drive. Use Quarterback Tools from the December issue CoverDisk and choose the repair damaged volume option.

Quarterback will scan the drive until it finds the bad checksum, then attempt to recalculate it. If this is not possible, the data block may be deleted, which will mean deleting the file which was held there. C'est la vie.

Oh, and remember that you should never, ever use a disk repair program on a hard drive
which is showing no symptoms of sickness. I mean, would you take your car's engine to bits just to try out a netw sacket set?

${ }^{\text {Pr }}$Plates of jelly I recently had a problem with my A500's floppy drive which the local computer shop diagnosed as (probably) a faulty chip called CIA. They subsequently offered to fix the fault for $£ 47$. This is too much for my pocket, so I decided to buy the CIA chip

## Net nightmare

のI am looking for a solution to a problem I have in transferring files between an A1200 and a 486 PC. So far I have been using Windows Terminal and an old Amiga comms package called Access.
I transfer large files (sometimes up to 30 Mb ) and although the method works it is almost non-viable due to the slow transfer speeds I can use. I use 19,200 baud and I'm sure I can transfer at 115,200 using Laplink 3 or 4 on the PC and a similar program on the Amiga.

The problem wouldn't be so bad if I could transfer the file in one go, but an unfortunate quirk in Access means it crashes if you select a directory that has a file larger than 999 k within it, so I have to break the file down using Splitz and transfer it as a series of 1 Mb chunks. This is a nightmare.

Please can you advise me on the package or combination of packages I am looking for, or suggest a better way of going about things?

Stephen Davies, Wolverhampton The first thing you should do is dump the comms package you are using and either lay your hands on a newer version or get hold of one of the other packages such as JRComm or NComm.
You should be able to transfer files of any size at almost 60 kilobaud if you have a modem with good error checking, and should not have to break files down.

If this isn't good enough, try a networking solution. A new PCMCIA Ethernet card has been launched by Californian-based Interworks. Dubbed the I-Card, you should be able to use this to connect the Amiga to the PC using a suitable PC Ethernet card and some decent software.

Transfer rates for Ethernet running through the PCMCIA slot won't be much above 300 k per second at best, but this is a hell of a lot better than using a modem, if more expensive.

You can phone or fax Interworks on (0101) $909699-8120$ for more information, or keep an eye on this magazine for a forthcoming review.
described by the engineer and fit it myself. However, having opened the Amiga for the first time I was seized by an attack of nerves. For all I knew it might as well be full of plates of jelly and ice cream. Do you have any advice on what I might do to locate the correct chip and set things right?

J Allen, Alsager

FIt sounds as if you are unsure even which chip you are replacing, and unless you can be sure it's best to leave it to the engineer you first spoke to.

If you insist on doing this yourself, confirm with the shop that you have the correct CIA chip (there are two of them, CIA-A and (IA-B), and use the old screwdriver method.

This involves carefully levering the chip out at both ends using a small flat-bladed screwdriver and is easy enough, if a little daunting when first tried. Carefully insert your new chip and put the Amiga back together again, then cross your fingers and turn it on.
You can't damage anything other than the CIA chip itself if you inserted the wrong chip. but as you've already paid for this it might be wise to have the engineer finish the job for you.

## Amos answers

「I have a few questions on Easy Amos and the difference between it and the rest of the range. I hope you'll bear with me.

Does the Easy Amos package contain both disks and a manual? If I buy the Easy Amos package would I still have to buy a compiler or would it be immediately ready to run?

Is there any difference between Easy Amos and the Amos Professional package, or once I understand Easy Amos will I be able to understand or graduate smoothly to Amos Pro?

I hope these questions are not considered a menace, but as an Amiga owner of only two months I am desperate to be weaned off games. Finally, if I buy Easy Amos, will I really need to buy Mastering Amiga Amos or could that be done in the distant future once I have a working knowledge?

Friend in need, London

FEasy Amos is a perfect way to start on the Amos trail, and has ample manuals with or-line tutorial help to gently ease new users into programming with the language. You would still have to buy a compiler to create stand alone programs, but Amos also has a utility called Ramos which will enable programs to be run from their own disks.

This inn't as fast and smooth as compiling a program, but Ramos at least makes it possible for users to release their stuff through the public domain. There are a lot of differences between Easy Amos and Amos Pro, but these are mostly to do with the latter's extra commands and facilities.

You should find no difficulties in moving from Easy Amos to Amos Pro once you've mastered the basics. If anything, this is the
recommended route for those who wish to take it slow and easy.

Lastly, you won't need another manual immediately, as the Easy Amos manual is quite good enough. Once you feel confident with Amos, though, there are a few very good programming guides, and there's always the Amiga Computing monthly Insight column.

## Choices, choices

PFor Christmas my parents plan on getting me a new computer to aid me in my work. I was thinking of an A1200 with 85 Mb hard drive, but my parents think I'd be better off with a PC 486sx because of its high quality of business software.

My current Amiga software includes PageStream 2, Wordworth 2, and Protext 5.5 and I use my A500 for business and leisure. I would be grateful if you could advise me on which machine to buy.

After reading numerous comms sections I would like to buy a modem to communicate with other modem users and bulletin boards. I was thinking of buying a Supra Fax modem ( $2,400 \mathrm{bps}$ ) or a Supra 14,400 baud model. I plan on using the modem about twice a week to download about four utilities or less each time and upload a few.

Could you recommend one of these two or even suggest another modem? Also, does NComm have an archiving and de-archiving utility? Thanks for answering my questions.

A Chang, Wimbledon

FThe choice of which machine to buy is one you'll have to make after long hard consideration, but the A1200 is a better bet on several counts. First of all, the software is much cheaper, particularly office software, and as long as you don't plan to run a large company's accounts and stock control on the machine, the Amiga is fine for business.

Modems'should be less of a problem if you read our survioal guide and round-up on this subject a few months ago, but you still seem a little confused. The Supra Fax modem is available in two models, the more expensive of which is a 032 bis unit capable of 14,400 baud.

This is the slowest modem we can

You got problems too? Then drop a line to Amiga Computing Advice Service, Europa House, Adlington Park, Macclesfield SK10 4NP and we'll move heaven and earth to help in these columns. But sorry, we cannot reply personally, so save those SAEs.
recommend for regular comms work as a cheaper and slower modem would make a big difference to your phone bills.

As for NComm, this is a splendid comms package, and you should be able to get your hands on the latest version of the Lha archiver when you first log on to a BBS. Friendly front-ends for complex archivers do exist, Lharca being one example that springs to mind, so you should have no excuses for not using one.

## Smanll screem



I own an A1200 and an AOC multisync monitor. Usually, I use the double PAL hi-res no flicker screen or productivity mode, but I have been unable to find any way to use the whole of the screen.

I know how to use overscan prefs, but even with these at their maximum I am still left with about two inches of space on the left and one inch on the right. Is there any way to utilise this extra space?

Obviously I am aware that I can alter the horizontal picture size of the monitor,
but I gain no extra actual screen space doing this. I also use a PC from time to time and this seems to be able to use the whole screen.

Surely the Amiga isn't inferior?
Craig Thompson, Orpington

FYou should have mentioned the AOC's model number, as it is possible you have a standard SVGA monitor and are mistakenly referring to it as a multisync.

The standard AOC 14 in model is happy with both double PAL and productivity mode, but these are often just approximately close to the monitor's normal operating mode rather than bang on.

You will always suffer from a certain amount of edging on a monitor screen, but two inches sounds a little over the top, inviting the conclusion that the Amiga's signal isn't quite to the monitor's liking.

Try using the VGA-only monitor driver, but if you get no joy out of this then there's little you can do except start saving for a true multisync or swap your AOC for a 1942.

## Cracking the colour code

$\square$As a new Amiga owner, I was delighted when I first booted 'ProPage 4 and created my first full colour layout, especially as I knew I could make some money this way. A friend of mine has a small restaurant and asked me to design and print some colour leaflets about his special Christmas dinner menu. I said OK, went to work, and had him approve the designs on my monitor screen before printing them at a local bureau.

However, when the 500 leaflets were delivered a few days later the colours were all wrong, particularly anything with red in it. I checked the PostScript output specs, confirmed that l'd chosen the right colours, and everything seemed fine, so why the big difference?

I hope you can sort this out, as I hope to develop it into a regular sideline.

R Savage, Edinburgh

5Colours shown as points of light on a glass screen are, unfortunately, very different from those same colours when sitting on a piece of duller paper reflecting the surrounding light.

The difference is one you can really only leam by experience, and it is only with a great deal of practice that the DTP professional picks up expertise in this sort of area.

There are, however, some things you can do to make things a little easier to start with, the most obvious of which is the Pantone colour system.

This has been specially designed for spot colour jobs and gives you the opportunity to tell the print bureau exactly which shade of ink you want by selecting it from a colour chart.

ProPage 4 supports Pantone colours, so you should use these if you have a specific needs for a particular shade of red.


If you own an Amiga you'll be interested in graphics is some shape or form. It's inescapable, as you look at the many beautiful images on your screen and on the pages of your favourite Amiga magazine, you can't help but enjoy good quality high resolution graphics.

You may be content with looking at those which have been created by other people, but sooner or later with all that graphics power in your grasp you'll get the bug and want to do a little bit of your own graphics magic.

The Amiga has always been particularly well served as far as graphics packages are concerned, but although it's always had real state-of-the-art graphics programs for you to run, it's only been in the last two years that graphics on the Amiga have really come of age.
True Colour or 24 -bit cards are really in full swing now, and what with the OpalVision, Harlequin, Picasso, Retina and GVP's IV24 and EGS Spectrum cards all coming with their own graphics

## Deluxe Paint 4.1 / 4 AGA <br> Electronic Arts No price

This is the great granddaddy of them all. The thing about Deluxe Paint is that it was written early enough in the life of the Amiga to become the standard by which the programs which came after it, ie. all of them, were measured.

This shows itself in that in any graphics program you can mention, the same keyboard short-cuts as Deluxe Paint apply, and features (even button icon designs) have been borrowed from DPaint's system to make newer programs look familiar. This means that once you've mastered Deluxe Paint you will be at home with almost any graphics program on the Amiga. Although not really


A fractal fantasy as DPaint gets to grips with countless colours from the ACA chipset

# Art 515 <br> Phil South looks at all the best painting and art programs for the Amiga, and some of the tools which drive them 

available on its own at the moment, being a key part of some of the serious bundles this Christmas, the program is well worth getting hold of by any means you can, as especially in AGA is it easily a match for low-end 24 -bit programs and enhanced HAM mode devices like those in our bargain bin.

The program is long overdue for major revision, especially with the likes of Brilliance taking up any slack between standard paint programs and the 24 -bit crew, but it still manages to keep its head above water.

All the most recent versions of Deluxe Paint handle animation as well as stills. The interfaces are very simple, and to step between frames you use the 1 and 2 keys on the top row of the keyboard.

This means you can draw with your right hand on the mouse and flip the pages back and forth with your left. You can even flip screens between the point you click the start point of a line or shape and when you click the end point.

For even more precise alignment the program also includes a lightbox facility, enabling you to see the previous frames in a sequence, making it simpler to match what you drew before with subsequent frames.

Until you've tried Deluxe Paint you
really aren't going to know what you're looking for in a graphics package.

So it's really not so much a question of: Are you going to buy Deluxe Paint or another program? It's: What program are you going to buy as well as Deluxe Paint?

## Brilliance Digital Creations $£ 199$

A new contender for the Deluxe Pain standard, and a very good one too, Brilliance. The forerunner of this greal program was DCTV Paint, also by Digita Creations, as part of the DCTV device. Th new program bears only a passin resemblance to its forebear. Brilliance is $z^{2}$ almost professional quality paint ane animation program with the ability animate and paint in up to 256 colour


Perspective effects in seconds courtesy of Digi-Paint


- reg mode in fact), but also with a ccial HAM version of the program Truebrilliance you can also edit and True Colour 24 -bit images.
This is all done without an expensive EBt card to hand, and to a certain extent $s$ are handcuffed by the limitations of OK, so Ham8 is really very close to real thing, but regular HAM mode, a interlaced, is pretty much touch and

This is a program best used on an AGA -achine. The price is justified by the alities and the speed with which they crate. It's a good program, but unlike so ny others it's fast too.

You can do pretty much all the things can do with Deluxe Paint and even Ee of the things you can do in palPaint and ImageFX. The quality of and result is better than what you see your screen in 24 -bit mode, as the gram works in 24 -bit under the hood, If what you see is only the best odition of the real image that you can th your particular system.

The animation settings are very phisticated having more in common wh a high end 24 -bit program or even a a)-tracing suite like Imagine or Ightwave. You can tween characteristics -re time and make some very special frects. There is a morphing feature but Is more like the Deluxe Paint version of morphing than a replacement for the more rofessional Morph Plus or Cinemorph.

This is certainly a very sharp contender or the best graphics program of this year, especially as OpalPaint (the only other program I really like a lot) was actually ast year's big hit.

## OpalPaint 2.0 Silica Shop $\mathbf{4 9 9}$

Although comparatively new to the Amiga scene, the OpalVision board has out a nice little niche for itself. It's a great 24 -bit card, and although there are a lot of promises of Video Modules (real soon now!) this is not the card's strength. It has one of the easiest to use 24 -bit paint programs on the Amiga, and now discounted I's almost as cheap as the old DCTV unit.

The 24 -bit quality on the screen is very mooth and clean, and like most programs which come with some kind of display enhancer, the new display makes the program look good. But OpalPaint is a very aseful and clever program. It's been
through more revisions than a best man's speech, and it's possibly the most finely tuned program of its type as a consequence of that.

Sure some people will still complain it doesn't do this, that or the other, it is still a very potent force in the 24 -bit paint market. Updates to all facets of the program and the hardware are available on-line on an almost weekly basis.
The program can be a little slow if you don't have any kind of acceleration. This is particularly noticeable on the spray can function and anything else where the screen needs to be re-drawn. 2 Mb of chip RAM is almost essential once you start getting into professional style work.

The screen sizes you can work at will be severely restricted if you don't power up your machine with a faster CPU and more brain in your Chip memory. It's a bit like salmon fishing through a keyhole.

Although not so good for creating game graphics like Deluxe Paint does, it's the bee's knees for True Colour graphics creation or for video work. It has the added bonus of being able to save in Jpeg format to save space on your drives, but of course this is not to be recommended for high quality images.

And of course you'll have to wait a while before you can use the OpalVision frame grabber, but that's just a minor detail. I don't care when the modules come along. If they do it'll be a bonus, but I'm not holding my breath.

## TVPaint

## Tecsoft - £600

TV Paint has been the graphics engine of choice on a number of 24 -bit cards on the Amiga. First it was the Harlequin, then AVideo, and then it popped up on a few others. This program runs on two screens, one for the Amiga, for menus and the like, and one for the display card on which the real time 24 -bit graphics happen.
The program is getting on a bit now, and although the quality is very good it is very expensive, putting it out of the running as far as most people are concerned. It is, however, simply the best than you can get for a variety of reasons. Unfortunately none of these have a bearing on the price. Version 2 has a lot of new bits added to prevent the age of the program showing in a lack of modern features. So now it has perspective, for example, just like all the other programs.

The menus are easy to navigate and the quality of the output is second to none.

## Hardvnare mwars

## Tablets

Apart from the mouse, what other graphics input options do you have? Serious options like TV Paint have drivers for Wacom graphics tablets, that much we knew about, but also you can get tablet drivers for OpalVision too.

This is handy for artists who have a bit of trouble converting the moves they would make on a page into mouse moves on an upright monitor screen. For the tight of pocket, Deluxe Paint v4.6 also supports pressure-sensitive stylus and tablet input.

## Scanners

Where scanners really start to kick ass is when you get over the $£ 500$ mark - then you start to see some really professional items, and not just the hand scanners but the flatbed ones too. These are sort of hybrid computerised photocopiers really, with no paper trays to change and no toner cartridges to refill.

The PowerColour Scanner (Power Computing £239) supports 4,096 colours and scans at resolutions of 50 to 400 dpi. There are versions available for the A500 and the A2000 with the A2000 version having its own little Zorro-shaped adaptor board.

The Powerscan v3.0 software enables you to digitise full 12 -bit images, which are stored in 12 -bit internally so no quality is lost when displaying as HAM. The software supports both Workbench 2 and ECS screen modes.

By way of opposition, there's also the Migraph Colourburst at $£ 399$ and the AlfaData AlfaColour at $£ 299$. Many other black-and-white hand scanners are available for upwards of $£ 99$. Obviously you then have to colour the images in, but that's half the fun isn't it, join-the-dots fans?

Then there's the Epson GT-6500 ( $£ 799$ plus $£ 110$ for driver software by ASDG) which scans in 24 -bit pictures in resolutions as high as 1,200 dpi (with special software interpolation).

For colour DTP there's no short cut to this kind of quality. OK so you could get yourself a good 24 -bit video digitiser, but the results will always be fuzzier and in almost every way inferior to a flatbed scanner.

## Digitisers

The VLab YC is the best I've used (MacroSystem £299). It's a half height Zorro card and as usual with Zorro cards it fits into any slot you've got spare. The card grabs a full frame of colour video when the grab button is pressed on the screen using the mouse, and this works best when the video is in motion.

Once the frame has been grabbed, the YUV image can be saved, or the frame can be previewed in HAM colour, or 16 -colour greyscale, or you can send the image directly to a Harlequin card for the best quality of image.

The DigiView unit supplied with the MediaStation package is the oldest and most used digitiser on the Amiga, as it was the first out and was in fact the only one on the market for quite some while.

You use it with a black-and-white video camera mounted on a tripod, and hold coloured filters over the lens to scan manually for the RGB components of a colour picture. Although not really holding its own among all the new units, it's still a bargain, especially second-hand.

New units from Rombo look to be about to change all this, the Vidi (12) and VIDI (24) RT (Rombo $£ 199$ and $£ 299$ ). Rombo have been in the digitising game a long time, since before the Amiga was a project box called Lorraine.

The VIDI 12 unit is based on the old basic mono VIDI Amiga, although now the unit also has the RGB Colour splitter built in to it rather than being separate.
The new VIDI 24 is full 24 -bit grab and save, with both these new units doing the job in real time on moving video the same way as the VLab. The main difference is that the VIDIs will work on any Amiga with a parallel port, whereas the VLab needs a Zorro slot.

## GRAPHICS



## <

OpalVision looks flickery and imprecise by comparison. This is the professional end of the game and you don't really want to know about it unless someone else is paying.

## Image FX 1.5 GVP•£199

Although primarily a treatment engine for graphic effects on already existing images, you can edit quite extensively with ImageFX. Although this is primarily a competitor of Art Department Pro v2, it can in fact act more like a paint program if need be, although for the creation of graphics you might want to look elsewhere.

It is a very powerful 24 -bit file manipulator, and if you want to have an Amiga version of Adobe's Photoshop, ImagePX is the package that comes closest to that. Not

## Bargain basement

## HAM-E

(Black Belt Systems)
A forefunner of the AGA graphics modes, providing 256 colour and 262,000 colour Ham-E modes. A built-in graphics editor never got past the beta stage and was anyway surpassed by Image Master, which eventually became a separate release.

Other programs which supported the unit came and went, like Spectracolour HAM-E and HAM-E workshop. These are nice units if you can find them, if a little tricky to get set up.

## DCTV

## (Digital Creations)

Before Brilliance came along, there was DCTV Paint. The DCTV was a combined painting and digitising unit which boasted real 24 -bit, which of course it wasn't, really, it just looked like it. A bit like AGA I guess. The unit had three plugs on the back, one which plugged into the RGB socket on the Amiga and had a pass through directly to an Amiga monitor. The output from the DCTV was sent to a composite TV monitor (or the video in socket of a domestic video recorder).
only can you manipulate images but you can convert them to BMP, DPII PC, Impulse RGB, GIF, JPEG, PCX, PPM, PMG, Rendition, Targa, DCTV and HAME.

The animation side also converts between ANIM and PC formats FLI and FLC. The program also supports a number of input devices like scanners directly from the user interface.

The program also does morphing via Cinemorph and a number of other mind-boggling effects. ImageFX is not to be seen as a replacement for any of the programs on offer here, but could be seen like Deluxe Paint as a standard tool in the arsenal.

## Personal paint

Cloanto - £59.99
Although UK distributor Micro-Pace recently vanished, this excellent program is still worth a look if you can get hold of a copy. Although strictly limited to 256 colours on an AGA machine, it shouldn't be written off completely as 256 colours is actually quite a lot!

PC paint programs have got by on this much colour for a long time, and the material you can produce is very colourful, and very precise, lacking HAM or Ham8's capacity for fringing or bleeding.

However this is all the program does, so if you want something a little bit more flexible, then something like Deluxe Paint or Brilliance might be more appropriate, depending on your budget. This program is also available in a reduced version with the new Picasso display card.

## MediaStation NewrTek £139.95

The graphics engine of this DigiView based graphics/presentation pack is DigiPaint 3. An old program now, it still has something to offer. It's HAM only, coming from a time when there weren't actually that many HAM paint programs.

All its work internally is done in 24-bit, and so the results are very smooth. It's particularly good at treating digitised pictures, which is not surprising as DigiView, also by NewTek, is also supplied with the package.
 well as an image processor. If yo well worth the extra investment

## Jargon buster

64 halfbrite

AGA
anim
anti-aliasing
chip RAM
fast RAM

GIF

## HAM

## hi-res

IFF

## ILBM

interlace

Jpeg
lo-res
overscan
pixel The dots which make up a TV or computer screen.
resolution The amount of pixels you can fit horizontally and vertically onto a mor itor screen. The Amiga has many different graphics modes. (See lo-res, hi-res, interlace, HAM, 64 Halforite, super hi-res and overscan.)
super hi-res

Mode made possible on Amiga's with the ECS chipset. Doubles hi-res resolutions. Also usable with interlace. - Thy the best footbail management gome for your computer. Where seved thousonds of satistied ustomess during our 4 yenis of wing Over 10,000 man hous (during 5 yeus) has been deticoted to Theprotion of this constantly improving game. It is one of the most - zr and occurate representations of a professional footioal manogars abid idlange to tocticilly out wit and conquer every opponent. Harges : 1 to 4 Human ployers, Rotings, Performance statistics, sack wettiers. 3 Difficialy levels, Manoger of the month and season whid, Pools, Pitk ary toom in ony dwision to begin with. - 428 Cup: Premier 22 teoms, Division 1,283 tove 24 teams. Fhodts, Tobles. 7 Cup compenitions with precise nules ( 2 legs, extro Exs, owoy gorl nule, seeded drows, Europem Cup tatles, 5 sults, medomestic ployer resticions etc.), Finalist route to g glory. Deseryeuly fixture/previous list, Week fixtres/iesths, Results ficen caicus meeting with opponent (goes bock up to 6 seasonis). | BISY TO PLAY Animoted |
| :--- |
| Whesting game |

## M STABEE

This gome has been designed to be as close to real racing os possible. Five years of development by o dever rocing expert has led to the second revision of this Flat Horse Rocing Simulation. Up to 4 ployers can participote os Owner Triiners with the primory objective of becoming the top rated troiner, in respect of prize money won, ot the end of each rocing season (March to November). There are up to 35 other intelligently controlled computer troiners to compete against and compore your personal pefformance.
To achieve this nim you must discover a potentiol champion and troin them so that they become capoble of competing well and winning any of the 47 big prize money roces (Handicap and Group). eg. The Derby To give you an iden of the tools provided in this game to assist you reaching your objective we hove listed the moin features below: - 250 horses each with over 60 independent variobles.

- 26 different roce couses (2 all weother), reol life choracteristics mirroing the diversity of racecouses in the UK (descriptions provided).


## World Gup Gricket Masters

A fantastic graphical and/or toctical representation of Cricket that hos been complately witten by a trodtional fon. You can physicilly participate with batiing and/or bowing or levve it to the computer to automatically handle. See full feature list balow :

## GAME OPIIONS

- 1 Doy linited overs or test.
- Wíte or coloured doting.
- Three Cindet grounds.
- Lood/Sove game. Skill levek.
- Computer/Human plojers. ANIMATED ACTION
- Sound Commentary.
- Umpire signak.
- All the strokes cut, pull, dive, etc.
- Appenk, droppel cathes, run outs. - Bouncers, wides and no balk.


## STATISICS

- Scorecard \& bowing andypis
- Weather and ground reports
- Wagon Wheel
- Manhoottan Chart.

Playter vaRIETY

- Rated on 8 adu ustatle foctors.
- Leff and ight honded plojers.
- Ronge of batting tppes.
- Editor to amend game stats.
- Bowler types indude semm,
swing, thange and both types of spin with 8 speed levels.

Ployers: Real life stalisicis reflecting the statt of $93 / 94$ season with
real positions, height, ope. Live tornster maket, Controct \& wage negolitions, Prefered foot (lati/ight//both), Loons, Inviriss, Triining, Specid tolents, Truines, Gorkeepers (sepuate skill cutegories), Detenders, Midifialdes, Altackers $\&$ Uuitity, Refirements, Foreign Thansers, Unhoppy plopers, Top 10 Hor shots.
Team: Training, Toctics (15 different styless), Aggession, Formation allows specific ploper field settings (Left winger, Sweeper etc.). Cibt : Sponssoship, Ground improvements, View opponent, Finances The Moth: Real fime scoretoard reporting gools \& inivies yellow/red cards, Scund effects, Interventions parmitted at any time to change toctics, formations and moke subss. Physical graphicol penally paticipation (optional). Over 80 different referces. Otimer: Fast lood/sove, Pinter occess, 20 Options to set various game preferences, Instruction book, Easy to ploy, Tectnical support. Plus: Over 100 other meticulous refinements impossible to list here. Etilor : Alows you to annend various items in swaed games. $£ 12$ Exto $\geq$ Scotish : Dadicated vesion detals owilhtle upon request.

## CRICKIT MASTERS

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There can be very few Amiga owners who have used neither a word processor, a spreadsheet nor a database program. And even fewer who wouldn't know a word processor or spreadsheet program when they saw one.

Most would doubtless also recognise a database but the evidence suggests that, as far as database program use is concerned, a lot of people are far from clear about the basic concepts, the benefits and advantages of the various types of database programs, and in fact about their own data-oriented needs!

Some users spend a fortune on a heavyweight package only to find that years afterwards they still really only needed 2 per cent of the facilities that had been provided. The chances are that a cheaper program could easily have the same job.
Others confuse database program power with the need for an application to have large amounts of disk storage space available. They waste money on an expensive package when they should really have got a simpler program and added a hard disk.

People buy "relational" database programs because they are "better" but then fail to use them properly. Users often, for example, set up record structures which prove difficult to modify at a later date (thus defeating one of the main purposes of the relational database ideology).
In short, database program use is not well understood, and although in these pages there is not space to deal properly with the underlying technical issues, you will find some help along with details of the Amiga database programs which are currently available.

The main advantages of a single integrated DataBase Management System (DBMS) relative to a collection of individ-

bBase - one of the many flat file database programs from PD source
ual flat file-based applications programs are easy to state. They should let users isolate their data, enable them to remove unnecessary data item duplication, and in general offer a level of data independence sufficient to allow stored data to be used in a variety of different ways. Having said that, a lot of so-called databases are nothing more than conventional record storage/retrieval systems that let you, the user, set up the required record format.

Because a database will consist of one or more files, all appropriate record definitions need to be created before any information can be stored. How this is done will depend both on the database

> Paul Overaa on why so many of us fall wide of the mark when it comes to understanding and using those most useful of application programs, database
package being used and on the application it is being used for. You might for instance decide you need a client file that contains client surname, first names, address, data of birth and telephone number details and most programs will allow such record fields to be not only created and named
but classified as text, numbers, dates and so on. They'll use these characteristics to provide limited verification during data entry. If for example you type text into a field which has been defined to hold numerical values, any self-respecting database program should give a suitable

## Product listings

## AmiBase v4 Supplier: One Vision Price: $£ 15$

Details: Useful, good looking, flat file database program with VCR controls. New version offers record filtering, improved (background) printing and many other facilities.

## BuddBase <br> Supplier: Your Choice

Price: $£ 1.30$
Details: Flat file freeware database program (Disk BU056).

DataRetrieve (Abacus) Supplier: Abacus

## Price: $\mathbf{\$ 7 9 . 9 5}+\mathbf{\$ 1 3}$ UK shipping charge

Details: This is a reliable product that is suitable for a great many types of applications. It has good documentation, on-line help, indexing and macro facilities plus extras like database password protection. The program can work with up to eight database files at the same time and it has brilliant search facilities. The screen tem-
plates, called masks, which are used to input data are easily created and versatile report production facilities are provided. Unfortunately there isn't a UK distributor but it can be ordered directly from Abacus.

## DataRetrieve Professional (Abacus) Supplier: Abacus

Price: $\mathbf{\$ 2 9 5}+\mathbf{\$ 1 3}$ UK shipping charge
Details: For serious Amiga users wanting a powerful system with relational facilities DataRetrieve Professional is, to my mind, the package of choice. It offers relational file links and the input mask arrangements allow you to set up any number of independent views of your database files using fields from any file.

There are similarly flexible mask-based output view facilities. Although there isn't the space to go into details, sview flexibility" is, to some extent, what the relational approach is all about.

The program is a true heavyweight with superb indexing/search and reporting facilities and many extras including its own Basic-style programming language
called Profil. If you are after an Amiga database package with power this offering really does deserve to go on your shortlist! Again, there isn't a UK distributor but it can be ordered directly from Abacus.

## FlexiBase Supplier: Your Choice <br> Price: $£ 1.30$

Details: Freeware flat file database program (Disk BU052).

## Gold Disk Office (Gold Disk) Supplier: Silica Systems <br> Price: $£ 49.95$

Details: This integrated package includes word processor, spreadsheet, DTP and business graphics facilities. It also offers a simple, but perfectly usable, flat-file database program. Files can contain up to 32,767 records, 256 fields per record and 256 characters per field.

Unlimited numbers of user-defined indexes can be set up and there are easy to use form and report generator options available. Very useful providing your applications are straightforward.


Pen Pal - another good bet if you want an integrated package
*aming or error message. As well as creating record definitions it is also usually -acessary to create some kind of screenbased data input form, ie set up the screen arrangements which you will use when aputting data. Since there's not a lot of point in storing data if you can't get at it, database programs will also provide integral searching and reporting facilities which allow you search for records based on particular criteria and create and print hard copy reports.
You might, for instance, want to search your client details database for all clients who do not have a telephone number and create a report listing their names and addresses. These types of things are easily
done with most Amiga databases.
Programs vary enormously in respect of the facilities they offer. Some provide only the most elementary file definition and data input facilities, while the heavyweight offerings on the other hand really do provide the high level of sophistication and flexibility suitable for the needs of an advanced user.

These offerings, incidentally, will come with their own Basic-like Database Management Languages allowing experienced users to create highly customised database interrogation and reporting routines.

There are similar variations in the searching and reporting facilities on offer
and on the extent to which data items present in the records of one file can be combined or linked with the data held in another database file.

The most sophisticated inter-file links tend to be those found with programs known as Relational DataBase Management Systems (RDBMS) but unfortunately it is these type of programs that are normally the most expensive and the most difficult to use properly.

Before implementing a multiple file relational database application it is best to look at the logical structure of the data that is being stored, carry out a process times gets described as an 'Address' database program. are database programs in the true sense.
known as Normalisation, and then use the resulting record structure as a blueprint or model for your real data files.

Most users who buy RDBMS software do not do this, and the result is that many never see the real benefits that relational systems can provide.

A Database program may provide all manner of other facilities such as ARexx control and Import/Export options that let the program read data from, or write data to, other Amiga programs and files. Many Amiga databases allow users to store references to IFF pictures, 8 SVX sound samples and so on and this enables not only specialised Amiga graphics and sound databases to be created but allows such material to be used as part of a conventional text-based information system. The potential uses are limited only by your imagination, and the amount of disk space you have available.

Extensive graphics or sound-oriented database applications will, needless to say, require a lot of disk space and in these (and a few other instances) a hard disk becomes essential. Many database programs can however be set up to run on quite modest Amiga systems (eg single drive 512 k machines) although obviously much depends on the type of application you are trying to set up.

## Words of warning

There is a certain amount of poetic licence as far as the word "database" is concerned and many programs described as databases push this to the extreme.

There is an Astronomy database program called Distant Suns, a genealogy database called Norgen, and even Digita International's Mailshot Plus program some-

None of these programs, nor many others that sometimes acquire a database label,

## Home Business Pack

 Supplier: Anglia PDPrice: $£ 4.20$ for a three-disk pack. Printed manual available at $\mathbf{£ 2 . 9 9}$
Details: This contains the bBase flat file database program along with a text editor, spelling checker, spreadsheet, accounts program and other software. Good value for money.

## KData (Kuma Softvare and HiSoft) <br> Supplier: HiSoft <br> Price: $£ 39.95$

Details: K-Data is part of the HiSoft K-Pack spreadsheet and flat file database offering. It provides similar record definition and search/sort/report facilities to those found in alternative offerings in the same price range.

Unfortunately the package shows its age in that it is unable to handle references to graphics or sound - so it is only going to be of interest to users wanting to set up conventional text and number-oriented applications. KPack comes with the usual high-quality HiSoft documentation.

## Mini Office (Europress Software)

Supplier: Europress
Price: $£ 59.99$
Details: Another integrated package which includes easy-to-use flat file database facilities.

## Order v2.54 (Shadow Software formerly South Hams Software) <br> Supplier: Shadow Software

## Price: $£ 19.95$

Details: This is one of the few budget-priced database programs that support multiple-file, relational links and in this respect it is considerably more powerful than other offerings of a similar price.

Order has had a rough ride in the review press and there is no doubt that many (but not all) criticisms of the early releases were valid and the poor original documentation did nothing to help.

Since the early days however a great many improvements have been made and the price has been brought down to a level where Order has become extremely good value for money. It is not as easy to set up as a simple flat-file database program (relational type
databases never are) but it is recommended for users who need some relational capability but cannot afford one of the more expensive heavyweight commercial offerings.

## Pen Pal (SoftWood) <br> Supplier: SoftWood Products Europe Price: $£ 49.95$

Details: Pen Pal is an integrated package that combines word processing and page/form design facilities with a simple database program. It's an attractive, well priced offering and although its database facilities sometimes seem to border more on the spreadsheet rather than a database-type arrangement, it does nevertheless provide a set of record creation and use facilities which are quite sufficient for many flat file purposes.

## Philo <br> Supplier: Your Choice <br> Price: $£ \mathbf{3 . 5 0}$

Details: This is a licenceware database program (disk CLU07) which is easy to use and perfectly adequate for simple applications.

Continued overleaf $>$

## Relational databases

With some data storage programs each application has its own set of data files. You might, if you were say a consultant, have an appointments program that stored records containing details of client names and addresses along with notes about any work carried out.

You might also have a mailshot application which stored standard letters along with, again, client names and addresses. These individual program and associated file arrangements are often called flat file applications and are so named because individual data files are just straightforward collection of identical format records with no interaction or links between the datafiles of various applications areas.

Independent flat file approaches are fine in many cases but when uses of the items held in the data files overlap all manner of problems start to appear.

In the above example the use of separate appointment and mailshot programs means that client names and addresses need to be stored twice and this duplication or redundancy is a waste of space.

More importantly it is necessary to remember to update the client details in both data files when changes need to be made.

The whole idea of the relational methodology is to separate the data from its use in a way which both allows many programs to use a common set of data files, and any number of differing input and output views to be imposed on the various items of data stored.

The software which enables this to be done is called a Relational DataBase Management System (RDBMS) or more commonly nowadays, a relational database program.

The database version of the above consultant scenario would involve an appointments/work-done file, a mailshot file, and a client details file that would be shared by both appointment and mailshot applications.

Changes to client details made from the appointments area of the application automatically become immediately available for mailshot use (and vice versa) without any further data entry. The result? Less work. Less chance of mistakes. Easy life!


## Jargon buster

attribute Some characteristic of an entity. Name, address, and postcode for example are three likely useful attributes of a customer entity.

DTP desktop publishing.
entity A database-application related object that usually, but not always, physically exists Customers and invoices are two commonly occurring database entities.
normalisation A process whereby the logical relationships of the proposed database entities and their attributes are examined with a view to removing various types of logical data inter-dependency known to cause data-access and or record field expansion problems. Reduction to 3rd Normal forms is sufficient in most cases.

## Product listings continued

## PowerBase (AmiVision) Supplier: AmiVision Price: $£ 14.95$

Details: This program started out as a licenceware title and has now grown into a fully-fledged, but budget priced, commercial offering. PowerBase allows users to set up record definitions for specified files and then enter, edit and retrieve data using SuperBase-style VCR controls. Text, numeric, date, time, logical (ie Boolean Yes/No. True/False fields), percentage and calculation fields are allowed along with an external field which can provide links to both Ascii text and IFF picture files.
Powerbase offers a good Workbench 2 style interface and, among other things, a reasonable set of search and filter facilities. Filtered records (ie a subset of records which satisfy some chosen search criteria) can be sent to the screen, the printer, or a file and there is a label mode which can suppress the printing of field names (useful for printing mailing labels - hence the name).

Although it's possible to create as many separate files as you want, there are no inter-file link mechanisms available. In other words this is a simple flat-file system! Despite these limitations the program is fair value for money and perfectly adequate for first time users or others with simple database needs.

## QuickBase Supplier: Your Choice <br> Price: $£ 1.30$

Details: Fairly average freeware flat file database program (disk BU009).

## S-Base 4 Personal (Oxxi) Supplier: HiSoft Price: $£ 129.95$

Details: S-Base is the new name for what used to be the SuperBase range and this offering, like SuperBase Personal before it, is likely to continue as the most popular Amiga Database program in the UK. Its VCR-styled control panel approach is easy to use and the program flexible enough to be used for all but the most demanding of database applications.

## S-Base 4 Professional (Oxxi) Supplier: HiSoft Price: $\mathbf{£ 2 4 9}$

Details: This is the package formerly known as SuperBase Professional. It's another truly heavyweight database package which provides sophisticated database creation, search/filtering and reporting facilities
along with its own Basic-style database language (with ARexx and comms support).

Both in terms of use and the facilities offered S-Base 4 Professional is rather different from DataRetrieve Professional (its main heavyweight rival) but there's no doubt that the S-Base product is an extremely capable program and another one for power users.

## Supplier telephone numbers

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|  | 0101-616-6980325 (fax) |
| AmiVision Software. | ... 0922414731 |
| Anglia PDL | . 0394283494 |
| Europress Software | ... 0625859444 |
| HiSoft. | .. 0525718181 |
| One Vision | . 0734422465 |
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## PICASSO II <br> EMPLANT

vareable Graphics (RTG) is the future of Amiga graphics display evoclogy. True RTG means that a graphics device will not be that by the memory llimitations of the host systern's Chip mem-
$\square$ b) the speed of the custom chips. A true RTG device does not
tit use Chip RAM at all, and can run exclusively in Fast RAM if
red for the best possible performance whilst allowing any
1 Behaved software to utilise the enhanced resolutions and modes of the RTG device without any modification to the trere. Well behaved software will be able to run on their own mesolution custom screens and will not have to rely on running ather the Workbench screen, or screen promotion hacks, to sw compatibility.
e Rcasso II RTG Emulator integrates seamlessly into the Amiga erating system to give the most reliable emulation available. The es resolutions provided by the Picasso II appear in all your applicais as new screen modes selectable from the standard teoMode requester. For any program that allows you to choose a - Icreen mode, you would simply choose a Picasso il screen te as an altemative (such as Picasso:1280 x 1024). You will not are to wait for any custom programmed versions of any program is compliant with the rules of the operating software. Such grams will be able to immediately take advantage of the asiso Il board. Programs that are written with AGA in mind will be ce to immediately take advantage of the new modes available to


The Picasso II is designed to take full advantage of the host computIr system. The built in Blitter and high speed memory subsystem - ean that you will have super fast screen updates. Switching stween Picasso II mode screens is very fast and switching between flcasso II mode screens and native Amiga screens is nearly instananeous (as fast as your monitor can re-sync). Because the Picasso RTG board does not use Chip RAM, your Amiga will be less likely ie suffer from bus contention problems normally associated with unning high resolution screens and heavy DMA activity.

The Picasso II RTG emulator has been designed so that it uses no Chip RAM. All available screen modes on the Picasso II use only Fast anM. This sophisticated design means that even a 1Mb Picasso II soard can support as many high resolution 256 colour screens as will fit in the Fast RAM of your system.

The Picasso II comes with several screen modes and resolutions that are industry standard and for which all monitors are designed. These modes operate at the proper scan rates and frequencies in order to take advantage of the most popular monitors available. In some instances, whefe those modes may not be sufficient, there is a program that will allow you to create your own custom screen modes. You will be able to create screen modes that exactly match your monitors frequencies and resolution capabilities. Picasso II comes with Personal Paint Lite, MainActor (animation program), IFF, GIF, JPEG and MPEG Viewers and drivers for ADPro, ImageFX, mageMaster and Real3D. Other bundles are available too

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# The last 


#### Abstract

Final Writer claims to take Amiga office software onto a new professional plateau inhabited by such icons of quality as Microsoft Word, but is this a tall claim? Stevie Kennedy finds out


After the activity of a year ago when Wordworth 2 and Final Copy emerged in a flurry of renewed fighting over the Amiga productivity market, things have been rather quiet on the word processing front. Ever since that time, though, SoftWood's designers have been beavering away at a secret weapon designed to end the war by Christmas.
Final Writer is a natural successor to Final Copy II, the program on which it is based, and attempts to answer some of the criticisms its little brother has attracted. Though a high quality package capable of superb output and with graphics management second to none in its field, FCII lacked many of the power word processing features enjoyed by its rivals.

A carefully crafted user interface, slick presentation, and ease of use guaranteed FCII a large and appreciative audience, but without strength in depth it could never hope to compete for the serious word-crunching jobs such as manuals, books, and lengthy reports to which Wordworth 2 was better suited. Final Writer tries to eradicate that gap and offer more power without losing the easy going nature of its ancestor.

In essence, the two programs are

understandably similar in appearance, but there is much more to Final Writer than at first meets the eye. In fact, to compare it directly to FCII is like comparing a Ford Escort to a Sierra Cosworth simply because they bear the same manufacturer's stamp and design style.

To attract users with big job requirements, Final Writer starts with a battery of improved layout and document handling facilities, the most important of which is the master page approach. Simply put, this enables the user to create a template of every page in the document bearing common information such as the document title, section headings, page numbers, and so on, making document processing a much easier job.

For example, if the title of a document is changed, it is a simple matter to change the master page for all pages to bear the new title, and if a logo is to appear on

## FinalWriter

Word Processor for the Amiga ${ }^{5}$

from SoftWood, Inc.
page) needn't be split into separate but can be kept together as a in of sections.
wh section can have its own page abering or the user can set the page ber at which each section begins, so printing it is easy to stitch thing back together.
Pe main body of any document ns has a number of default styles, but ere can define new styles, and as each
ton can have its own master pages
ret is a great deal of flexibility in the mm . Default styles include settings for Stopic headings, the table of contents, at so on, and all are user-definable.
Unlike in Wordworth 2, the user can sde not only to automatically generate eindex or table of contents, but can also int the font and text style in which the arious elements of the table will be rited. Large friendly requesters handle such operations in style generation, adeach style can be assigned a hot key.

In short, there is little the program ald do that it isn't already doing to -ise life easier for large documents. With le master page, sections, style tags, and insomatic list generation features, those riting long reports or novels will find in is package a lot of time and energy wing attractions.

## SCIENTIFIC

In any legal or scientific document, the main body of text is more often than not arranged in sections which may have their n topic headings or a simple section dentifier such as L.(a).ii. To cater for this wrt of document, Final Writer gives the aser complete control over how outlines lie generated.

Automatic generation of the outline is determined by the styles used in a tocument, so that if we wanted all ub-topics included we would go to the yle definition requester and indicate at What level in the outline each type of sub-topic appears.

At first this can be a little confusing, id a sample document would have elped new users, but with practice the

outlining of complex documents should be no more difficult than marking words for inclusion in the index.

Other layout tools include multiple columns complete with vertical justification, hanging indents, and text boxes. The latter is a very DTP-esque feature and seems to lift Final Writer into the publishing arena, but in reality it is of limited use.

Text boxes can be created easily enough, moved around, rotated, resized, and treated to all extents and purposes as free agents on the page, but they can contain only a single line of text and are therefore of use only for headings and logos.

Improved flexibility does, of course, come with the ability to take a word and stretch, rotate, and re-colour it, but nowhere near as much flexibility as would be gained from treating all text as a page element.

All other operations regarding text and its handling are sound and well thought out, containing many options more usually associated with DTP. Of particular interest is the control over text width, leading, and oblique angle.

By selecting an area of text and using the width option, words can be given a new width from between 50 per cent and 150 per cent of the default for that typeface. Again, leading (the space between lines of text) can be controlled by selecting the number of points between each line (one point being $1 / 72$ inch).

Oblique control offers the user a definable amount of italic-like slant in


Part 3: Do you get your inspiration from a bottle?
Alladin was the third son of a lonely Lybian sheep herder whose main aim in life was to collect more old lamps than his deadly rival, the powerful Sheik Al-Habrim. Throughout his childhood Alladin never questioned the growing number of broken old lamps and candle stubs which slowty took over the two up two down terraced mud house he shared with his mad dad, but as he grew from boy to young man he began to worry about his father's fetish for obsolete sources of domestic lighting,

One day, as Alladin returned from an unsuccessful pot-holing expedition, he noticed in a remote rock cave a dull old lamp of the ge-nie-bearing variety and, unable to control his mounting excitement, gave it a vigorous rub. There was a flash, a bang, and when the acrid smole from the cheap fireworks dritted away, Alladin was astonished to see the blimp-like figure of a real live Genie, walling around holding the small of his back and complaining about the light.
"Er - hello", ventured Alladin.|
"Are you a Geniel" The fat gaseous figure stopped his grouching and looked at Alladin as if he were in sane.
"No, Fm here to read the meter. What do you think!"


Defining styles with the simple requester
letters, either to the left or the right, and can be used in conjunction with other effects to create an unusual look for a masthead or logo. It is no substitute for a proper italicised typeface, and will seldom make an appearance in body text, but oblique can be a useful design tool.

With capitalisation under the beady eye of yet another option, offering all caps, normal, or small caps, Final Writer's text handling facilities come right up to scratch with the notable exception of a show invisibles toggle. This feature, to enable the user to see carriage returns, tabs, and spaces on-screen represented symbolically, is a basic of just about every other word processor in the world and a breathtaking omission from Final Copy II.

When the same omission cropped up on the professional follow up to FCII, I for one was puzzled and disappointed. Many might think this is a point of pedantry, but when loading a file from another source, perhaps an Ascii file from a CoverDisk or PD disk, or a document saved as Ascii from another word processor, it is absolutely vital that one can "light up" the control codes to see where the document might have a lot of double spaces, tabs, carriage returns at the end of lines, and so on.

If such control is not possible, the hassle of re-formatting a document blind has to be experienced to be believed, and I would beg SoftWood to make good the fault as soon as possible.

On a brighter note, Final Writer is a superb handler of graphics, the one area
in which most other word processors take a dive. All IFF bitmap formats are supported as is the industry standard encapsulated PostScript (EPS), and either can be imported and displayed in full colour.

Speed of operation when graphics are involved can slow to a crawl on some packages, but Final Writer shows its SoftWood pedigree by providing both speedy treatment of imported graphics and a few built-in tricks of its own.

Lines, boxes, and ellipses can be drawn directly on screen using icons on the button bar, and text flowed around them in the same way as imported graphics, giving the program a distinct edge in presentation terms. Creating documents with borders and other graphical content is much easier than in any other Amiga word processor, and screen update is refreshingly fast.

That's not to say speed doesn't suffer, and in 256 -colour mode the program can become a bit tiresome. However, while Final Writer is being tiresome most other packages would have reached the "never mind, I'll hire a couple of scribes" stage, and the program has more than one tactical approach to feline de-furrification.

When large Ham 8 or EPS pictures begin to slow things down a bit, simply changing the way the images are displayed is easy. The user can change each picture individually or all in a
document at once, so the largest can be turned off while the smaller graphics are displayed properly.

As soon as they are bumped into preview mode, on-screen images are replaced by a box containing a diagonal cross in time-honoured newspaper paste-up fashion, thus speeding up scrolling and screen refresh. In this way, pictures can be viewed in full colour to check that they don't clash with the document's other colours, then switched off to save speed.
Imported graphics cannot be rotated, but any lines or shapes produced using the integral drawing tools can, which makes them useful as bounding lines. This is a technique whereby the user draws a series of lines close around a complex imported graphic, then flows text around the bounding lines rather than the image.

Irregular text flow is therefore possible even when the image is imported in a solid box of colour. The package offers contoured text flow to the left or right, but not both sides at once, so the bounding lines compromise comes in particularly handy in some documents.

All graphics can be treated as free page elements and moved around at will, but to retain control once the number of images and text boxes grows, Final Writer offers a few handling tools. Group and Ungroup perform their obvious functions, enabling the user to move and scale a group of images as one, while Lock and Unlock can be used to avoid unnecessary waits for screen refreshes because a graphic has accidentally been moved a tenth of a millimetre.

A whopping 100 EPS images, some good, some feeble, are included with the package and are accompanied by 120 outline fonts in the NimbusQ format. Final Writer will also accept any AGFA or Adobe Type 1 PostScript fonts, a fact which is particularly welcome given that it will print EPS images and PostScript fonts to any printer, and has a good custom PostScript driver for the rich users out there.

At times, the screen display of such fonts is less than perfect, and at normal ( 100 per cent) magnification, nine point text can be difficult to read.

Final Writer attempts to offset this by giving the user control of screen resolution, which can be set up to 300 by 300 dots per inch using the excellent preferences menu, but the only real answer is to buy a bigger monitor or use the 125 per cent viewing setting.

Flipping back and forward in view modes can be annoying, but as there are three ways of doing this (menu, button strip, and holding down Alt while clicking the mouse button), the user at least has plenty of choice.

Navigation in general is a pleasure with this program, as the user can jump between sections, use the scroll bars to quickly jump from one part to another, use the page button, or select Go To Page

## Printed output

Final Writer enjoys excellent printed output thanks to its built-in PostScript printer driver and its ability to send EPS images and outline fonts to any printer. If a dot matrix or bubble jet printer is used, Final Writer will coax the unit's best resolution from it, ensuring that the quality of hard copy is as good as it can be.

The clean way in which outline fonts appear from a cheap bubble jet is very impressive, and is as good as any of the top notch DTP packages. EPS graphics printed at 300 dpi on a Canon BJ10 are similarly satisfying, so documents output to one of the middle range printers such as the Canon or the HP DeskJet series should be acceptable for home or business use.

Printing preferences are available for the program's final (best quality) or draft (images printed as preview boxes) settings, and for graphics printing. Dithering can be either ordered or halftone, and the PostScript printer preferences also offer custom halftone


Printing options are extensive and easily set
settings for screen angle, lines per inch, and whether dots or lines are used.

Default settings for most options are perfectly acceptable, but if the user has specific requirements or fancies a bit of tweaking. Final Writer is very accommodating.

from the menus. This pattern repeats itself throughout the package, which offers two or three ways of doing everything before the user even considers ARexx macros or the user-definablebuttons and menus, and this is a tribute to the thought which has so obviously gone into the whole package.

From the 700 page manual (I'd have preferred it ring-bound, but never mind) to the smooth operation of just about every feature, Final Writer is a product which oozes professionalism and an attention to detail.

As a word processor, it has several advantages over Wordworth 2 , hitherto the leader on the serious side of things, and yet it has all the qualities and more

There are plenty of text style and formatting options for use in style tags
that made Final Copy II a hit as a simple DTP package. Such a combination is hard to beat, and although SoftWood might not have made it to the Microsoft Word level just yet, they're not very far off with this release.

SYSTEM ESSENTIALS velLow = Recommended
If Final Writer doesn't quite live up to the claims that it rivals Microsoft Word, it is because of a small list of annoying omissions and features that haven't been finished off. None of these is particularly damaging, but there are enough of them to ensure that the package is flawed.

Of most concern is the lack of a show invisibles option, discussed elsewhere, which can make editing imported text very awkward, but up there on top with this is the lack if an undo edit feature. Both basic features should be implemented as soon as possible.

In other areas, it is impossible to copy text from the document and paste it into search and replace requesters, and there is no highlight and drag capability. Both are found in the leading PC and Mac word processors, and both can be great time savers.

Another omission is the lack of bookmarks, used in Wordworth 2, which enable the user to jump to pre-arranged places in a document, and the absence of any sample documents with related tutorials might dismay first time WP users.

Limited options on Ascii importlexport can also be a pain, and the rotate function's refusal to work with imported graphics sets a limit on page design. Finally, the auto-save feature is very poor, as it throws up a requester every time it is about to save out and asks the user to confirm.

Excuse me, but isn't the word "automatic" to be found somewhere in the term "auto-save"?

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Yet another programmer-friendly feaure allows CEDPro to detect bracket and brace errors within the code in addition to drect editing of binary files.

Macros are another area in which it

# Editing and updaie <br> <br> \section*{control} 

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## Paul Austin casts a kindly eye on the latest release from ASDG and the ultimate in infra red control for VlabY/C

Compatibility also shouldn't prove a problem as the program works across the entire range while making the best of AmigaDOS, employing the Clipboard to share its output with other packages.
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Obviously with the myriad of PD and shareware text editors CEDPro is strictly for the pros. However if you demand the best and are will to pay for it CEDPro could well become the ADPro of the programming world.

> Product: Cygnus Ed Professional Supplier: Silica Systems Tel: 081-309 1111
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## Automation with AFrlink

If you're among the numerous videophiles who've invested in VlabY/C the word, AirLink may inspire a distant memory of promised automation. For those unfamiliar with VlabY/C, the connection between the two revolves around VlabY/C's IFR frame grabbing capability.

IFR - interleave frame recording - gives VlabY/C the unique ability to grab unlimited sequential 24-bit frames from live video. To achieve this, it first picks a reference point on the tape, followed by a starting frame, from which a user defined number of frames are then grabbed.
The beauty of the system is that any VCR can be used for the process and better still no timecode is required on the tape itself; the software quite literally remembers which frames have been grabbed and then attempts to grab the remainder on a subsequent pass over the tape.
The only problem with this approach is its heavy dependence on user time as the software demands constant rewinding of the tape ready for the next pass. However thanks to AirLink hours spent at the controls of a VCR are a thing of the past. Existing users may recall
 that IFR's control window provides the option to not only execute a processing script on images but also add a rewind ARexx macro which can call on Airlink to do all the hard work for you.
As a result complete automa-

Keep your remotes
on-screen rather than down the sifde of a chair
call a special macro editor with which to edit existing macros when necessary. Like its predecessor, you can edit literally dozens of different files or file areas simultaneously. As for speed, there are no complaints - although there rarely are with any text editor. However, no matter how many files you have open it's highly unlikely you'll ever need to wait for the program to catch up with your editing exploits.

Specialised needs are also catered for with numerous options including command key bindings, variable tab sizes, word wrap, screen sizing and definable colours - even the scroll speed can be defined and saved. In fact alternative set-ups can be recalled as required.
tion is now possible with the only user input being initial scene selection and IFR set-up - after which you can leave your Amiga and the VCR to their own devices.

No matter which application you apply AirLink on the basic set-up procedure remains the same. First you must install the hardware - this takes the form of a cable connected to a small Infra red transmitter/receiver, the other end of which slots into the Amiga's free joystick port.

## Handy hotkeys

Once installed you simply run the AirLink software which provides numerous examples along with the essential sampler program. As the name suggests this allows you to program AirLink to emulate literally any infra red remote controller.
In order to control a device you simply design a graphic representation of a remote control panel using the paint package of your choice. The Airlink software then allows you to add button areas to the graphic - appending the appropriate remote control command on each. These graphic remotes can then be saved out, complete with hotkey combinations, and recalled when required.

Actually programming Airlink is very simple; you just activate the sampler program, record the signals from the original remote you wish to control and then append the appropriate signal to the button in question.

Alas that's all that space will allow for this month, but tune in next time for more on AirLink and its immense potential within a multimedia environment.


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 MARKETING, Ist Floor Officer, 31 Faring don Rd, Swindon. Wills SVI ORDERING BY PHONE -gram is an extension to the Amos lanthere are some special commands aibed to the standard Amos command -x which you can use to move objects nind in 3D space.
Orce the Amos 3D extension has been Thed to your program, you can load and -iove 3D objects in your normal Amos grams using a series of new mands.
Now you have to come to terms with zidea of space - 3D space. The world aow has a trio of axes, called $x, y$ and $z$. We are used to using $x$ and $y$ on the comFter screen, and translating objects itound that screen merely involves adding numbers to their $x, y$ co-ordinates
like the numbers which tell a move igrite command to shift the position of a sprite. But now you have an extra dimension, that of depth, and this is the z dimension.

With Amos 3D there are a new set of commands called "Td" commands, and Bese preface any 3D commands you put in your programs, like this example:

## Td Dir "30*

This points to the disk which contains the 3D objects. It's the 3D version of the "Dirs $=$ " command you get in Amos. Next a few commands you will be familiar with:

Hide : Double Buffer : Autoback O
If you are moving sprites, even 3 D ones, you'll need to be double buffering to cut the amount of unnecessary flicker. Next you have to load the object:

```
Id Load "checknark"
Td Object 1,"checkeark*}0,0,5000,0,5000,
Td Ob
palette ,.......,.,SFFF,SF,S777
```

The process 'is not unlike that of loading and positioning a sprite. First you load

## Our Amos expert, Phil South, concludes his two-part look at Amos 3D and looks at some undocumented features

Adding 1 an extra dimension
the object, in this case "checkmark". This is loaded from the disk you pointed to as being your 3D directory. Then the Td Object command positions the object on the screen. It's object 1, its name is "checkmark", and we want it positioned as described in the command.

The first three figures are the position of the object in space, so we have $x=0$, $y=0$ and $z=5,000$. This is pretty much dead centre on the screen. Next we want an attitude, and this doesn't mean your shape should be talking back and dissing you.

Attitude describes the direction the shape is pointing, in this case $\mathrm{A}=0$, $B=5000$ and $C=-4000$. This in unimportant if the shape in question is a cube, but if it's a spaceship you'll want it to be the right way up and pointing in the direc-
tion it is supposed to be flying.
Finally we enter the loop zone where the movement is calculated:

```
Repeat
Td Angle \(1, h, 0, h\)
```

This is like a Bob command, where the angle of the object in all of the three dimensions is fixed.

## $h=\lambda+1000$

Increment the X dimension and our object will tumble.

$$
\begin{aligned}
& \text { Cls O } \\
& \text { Td Redray } \\
& \text { Screen Suap } \\
& \text { Vait Vbl } \\
& \text { Until False }
\end{aligned}
$$

## Hidden gems

The disk also features details of some undocumented Td Commands like the one to define order in which objects are drawn:

## Td Priority $\mathrm{n}, \mathrm{P}$

where $\mathrm{n}=$ Object humber and $\mathrm{p}=$ Object drawing priority
This allows you to specify the order in which objects are drawn by the 3D system. In other words objects that are drawn first appear in front of other objects. The command makes some interesting special effects possible:

Priorityep
Object draving order
which translates as:
0
$\rightarrow 0$ $\begin{aligned} & \text { Drav the object in the noraal way (by depth) } \\ & \text { Drav the object in front of all other objects }\end{aligned}$

Orav the object in front of all other objects
vith a lover priority
Drav the object behind alt other objects vith a bigter priority.

By default all objects have a priority of 0 . Note that if two objects have non-zero priority the one with the highest priority will be drawn first (in front).

The other undocumented feature is TD SET COLOUR which sets a specified object block's colour combination, like so:

## Id Set colour $n, b, c$

where $\mathrm{n}=$ Object number, $\mathrm{b}=$ Block number and $\mathrm{c}=$ Colour combination code of the block (same as in OM).

This command is the language equivalent of OM's colour combination tool described in the 3D manual. It sets the colour combination code of the specified block.

Valid colour numbers range from 0 to 16, colour combinations 0 to 12 are the same as in OM , colour combinations 13-15 are new. An out of range colour code will be truncated to the nearest valid code without causing an error.

And wrap it all up with drawing the screen and waiting for the next vertical blank before you alter the position of the object. It's all basically the same kind of deal as moving sprites around the screen.

Obviously you now have to learn to think in 3D, but that goes with the territory. Vectors are hard to do in normal circumstances, but this program should make the whole thing really that much easier to cope with. You can sketch out your 3D ideas on graph paper beforehand, just to give you an idea
of what you want.


Missed last issue's first part of the tutorial? Catch up by ordering a back issue. Turn to page 172 for details of how to order.

If you want to really master Amos 3D, our exclusive manual offer can get you there at a discount price. Turn to page XX for details


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I

- moVision aren't new to the business of TV graphics, and their groundtreaking Broadcast Titler package has $r$ long been a standard of excellence in $[-5$ of its high quality fonts and smooth mes-aliasing. Now the company have noved from the purely titling arena into 7. graphics proper with the release of Vrotage 24 , a program designed to moluce not only text titling, but 24 -bit ledrops and transition effects.
Mantage is a sizeable package supplied = six disks and comprising the main -gram itself, some tutorial data, and tht anti-aliased fonts. The latter use a mprietary format and are the only Tpefaces available for use in Montage, Fough a range of font packs will be ifered as back-up and a module should won be released making it possible for uers to treat PostScript fonts as Montage fints.
A disadvantage of this approach is that te user is dependent on future releases IT InnoVision, but the advantages otweigh this. With the carefully optitised typefaces supplied as standard it is fossible to carry out a wide range of ophisticated operations on your text.


## SUPERB

Text can be scaled in any way, coloured sing smooth gradients, given a variable amount of soft or sharp shadow, mbossed, bevelled, or even re-kerned, all with superb anti-aliasing. There can be no excuses for shoddy presentation text when jou're using this package, as over half the available functions are dedicated to contolling the use of high quality verbage.

All operations are carried out using the triendly "big button" interface used on most video and TV software packages these days. Everything hides behind nice ensy buttons on clear, uncluttered panels, and the main areas of interest are sensibly separated into screens of their own.

The beginner should therefore have lew problems with Montage, and the well written, concise 130 -page manual could easily find itself back on the shelf inside
ten minutes. Part of the reason for this is the program's relatively simple purpose in life, which is purely to produce text on a backdrop, but the designers should also take credit for keeping things as straightforward as possible.

Montage will run on either an AGA Amiga or a machine equipped with the OpalVision or IV24 cards, and works best when teamed up with OpalVision. In this configuration, Montage can utilise full $24-$ bit graphics and a full complement of 20 transitions, 13 of which work with AGA


MIx text, backdrops, and brushes with ease

# Smooth talker fussy about the system setup. All <br> <br> Stevie Kennedy wipes and fades with <br> <br> Stevie Kennedy wipes and fades with Montage 24, the latest high quality Montage 24, the latest high quality TV graphics package 

 TV graphics package}
and only two with IV24. On a standard A4000, Montage is comfortable enough, if Workbench overscan settings must be reset to default and mode promotion must be turned off or the program won't run properly. This is a pain when used on a machine which has a multi-purpose role and therefore a multitude of overscan and monitor settings, but shouldn't be a problem if Montage is being used in a purely video environment.

When first used, Montage can have a strange initial impression as all pages in a sequence are set up on a HAM preview screen which only roughly represents the finished image, then rendered as either 24 -bit or super hi-res Ham8. Finished images once rendering is complete are superb and quickly dispel any doubts brought on by the HAM preview which,
to be fair, is designed to make production as quick as possible. When working in 24 bit it can be more than a little memory and time consuming to throw chunks of picture data around, so by demanding that everything takes place in HAM before final rendering, Montage avoids long waits during production.

Unfortunately, the same cannot be said about rendering or the final playback of complete sequences. Rendering each page can take a while, particularly if the page includes a lot of text which has been coloured, scaled, and so on.

As each page can be a fairly monstrous 24-bit file, Montage loads each from disk as it plays them back, which means that in addition to the rendering delay there is a relatively slow rate of playback.

For example, an average page might take seven seconds or so to load and be displayed using a page transition effect, a delay which though perfectly acceptable for many purposes would restrict many videographers. Montage partly makes up for this with a couple of tricks in the triggering department.

Pages may be set to display immediately upon loading, which is fine for looping information displays, but the user can also set a timed transition or choose to use the General Purpose Interface (GPI) trigger. This is a method by which Montage can be triggered to go to the next page by a GPI switch connected to a VCR, making possible the use of Montage pages genlocked over live video action.

The inclusion of this sort of triggering gives Montage an outlet in the multimedia
point-of-sale world as well as opening up many more dramatic uses during presentation, and with its top notch results, easy operating environment, and decent transition effects it should do well as a dedicated graphics package.

With the reservations that speed of playback could be improved and the fact that Montage grabs hold of the system and refuses to multitask, it is difficult not to recommend this program to the videographer in search of broadcast-quality graphics.

As a dedicated system, it is perhaps not ideal for the home video enthusiast, but if the question "how can I title my video to a higher quality?" is put, Montage 24 might well be the answer.

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Amiga Action, September 1993

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Impulse's long-awaited Imagine 3.0 hadn't quite shipped when this issue went to press, but the company did ship an interim version - Imagine 2.9 - to their registered users.

Since 3.0 was taking longer to finish than expected, Impulse sent out 2.9 which has many of the new features - so current Imagine users could get started with some of the new capabilities, and act as testers for the new program aspects. By the time you read this, Imagine 3.0 should be available, and we'll have an update on the full program in an upcoming issue.

If you're not familiar with Imagine, it's a 3D rendering program with a quad-view editor, powerful animation capabilities, and fast rendering speed. Although the previous release, Imagine 2.0, didn't have the massive feature set of newer programs like Real 3D 2.0, it did have fast rendering, fairly bug-free operation, and a massive library of commercial, shareware and PD objects and utilities to support it.

Some major new features are coming in Imagine 3.0 . These include bones, kinematics, improved anti-aliasing, new light sources with improved shadows and shadow mapping. Also coming in the release version are new stage and animation tools, and the long-awaited improved manual. Version 2.9 comes with a 25 -page addendum that discusses the new features.

Imagine has always been a fantastically powerful program, but the poor documentation has previously been of little help in getting you over the program's learning curve.

There's plenty new in Imagine 2.9 . These features are strikingly obvious, as Impulse put almost all of them in a menu called New, figuring that everyone who got release 2.9 would immediate want to jump in and play with them immediately.

But the most useful feature - the one that alone makes this upgrade worth the price - isn't obvious immediately: Imagine has a new real-time interface. Now objects actually move around in real-time in the Perspective window as you drag and resize them. There's no way 1 can emphasise enough how much easier this makes it to compose scenes.
In each of the editors you'll find three
new gadgets which support this real-time perspective feature. The A gadget controls angles, letting you move the camera's perspective of the object by moving the actual view of the object. Z controls zoom, letting you move the view in and out.

Subtle but powerful is the P, Perspective, gadget; this lets you change the perspective view, so that, for instance, a checkerboard floor will appear to be made from squares instead of diamonds. (It's like adjusting the angle on a telephoto camera lens to remove distortion.)

A new FOV (Field Of View) menu item lets you precisely adjust the camera's view field between 10 and 120 degrees for similar effect.

The Quick Edge feature makes moving objects around much quicker. You can define only certain edges to show up, so you can, for instance, only view the out-


This logo was created by loading a PostScript font into Imagine's new Spline Editor and extruding the words into 3D. This uses just a few of the 50 textures included with the new release; note that the $A$ in Amiga has been particlized

## Use

$S$1
line of your aeroplane's fuselage and wings while working in the editor. This not only speeds up redraws, but makes it much easier to differentiate objects, since the screen is far less cluttered without the tiny triangles that usually make up objects everywhere.

These functions work in all the editors that use the quad-view interface. You'll find plenty of new features in the individual editors as well. In the detail editor, the primary place where objects are created and modified, the new Load/Save DXF menu items let you import and export objects in AutoDesk DXF format.

This is the most popular object format in the IBM-compatible world, and will let you access the huge library of objects available for those machines.

There are a number of new Deformation functions for modifying existing objects. These include Twist, Shear, Taper, Pinch, Bend, and Stretch. You can select the gadgets at the bottom of


Imagine's new Spline editor allows you to work with
PostScript fonts and other 2D objects and extrude them

## With Imagine 3's release imminent,

 Denny Atkin takes a peek at Imagine 2.9 , which has many of the new versions features and is shipping nowthe screen and manually deform objects and primitives using your mouse, or you can choose the equivalent menu item and use requesters to precisely define how you want to deform objects.

Next to Deformations in the New menu is the Particles option. Particles are objects - spheres, cubes, even dodecahedrons which can replace the faces of your object. See the "A" in the Imagine-rendered Anriga Computing logo for an example.

You can have an object appear to be created from bubbles, use particles to make object look like it's evaporating, or any number of other organic-looking functions.

Imagine doesn't let you control the behaviour of individual particles but instead ties them into the original polygon faces of your object. This is done to keep the amount of controllable objects down to a realistic number.

You can now use the Fracture function in Object mode to create some impressive effects. Fracture breaks up the triangles that make an object. If you type in a Fracture value of 1.5 , for instance, your object will be 1.5 times larger than it was before. But the extra space is now between the triangles that make up the object.

Progressively larger fracture values in an animation can be used to make it look like an object is exploding; if you fracture an object to a large degree, tween back to the original object, and run this reversedfracture, it can make an object look like it's
forming from thin air - a very impressive effect.

Other new functions include Latticize, which is handy for making frameworks like the inner structures of buildings of space stations (see the new Imagine logo for an example of this); Applique, which lets you wrap an image onto an object to deform the triangles that make it up creating a 3D effect that corresponds to the grey-scale brightness of each pixel in the image; and Wave, which is a ripple effect.

The new Check Obj menu item is handy for finding and correcting problems like duplicate points or improper edges in objects. Although you're not likely to have these problems with objects you create yourself, they often show up in objects translated by conversion software or third-party object editors.

Finally in the Detail editor you'll find the new States function. This innocuous menu item packs a lot of power. Essentially, it lets you define different states - size, shape, and other characteristics - of objects or groups of objects.

A simple example would be a box that you morph into a teardrop. You create the initial box with a certain shape and colour, then you define that state as BOX. Then morph and otherwise change the object. and save that state as TEAR. Now you can save the single object which has both "states" of the object stored in the file.

You might have an aeroplane that has

The new title screen; note the use of the new texture and lattice features in the word Imagine
Design Team
Code




This interim release puts the new features in their own menus; this is the Detail Editor


## Jos <br> Sve different states where the propeller is

 could have a human figure with different states depending on the position of the limbs. You can tween between states, making movements or morphs between states a snap.States can also be used to do texture and image tacking. This solves a problem with earlier versions of Imagine where textures and images would "slip off" of an object when you manipulated its shapes. By tacking the texture down it maintains its position on the polygons that make up the object. Now you can twist a T-Rex's neck around without worrying that the impressive new Dinosaur Skin texture won't follow his head as it turns.

Impulse have hesitated at replacing the current polygon-based object creation system with a spline-based one due to performance considerations - although some functions in Imagine aren't as intuitive in as in some other programs, generally the rendering takes place much faster, and Impulse don't want to lose that advantage. In the meantime, though, they've included a 2D spline editor for creating shapes which you can then


You can now check an object's structural integrity before rendering it, saving you from problems later
extrude. Although this feature is nice for creating some objects, I've found it most handy for text.

The spline editor will load IBM-format PostScript Type 1 fonts, making bringing text into Imagine a simple process - no more loading individual character objects and meticulously positioning them to get the best effect.

To create the "Amiga Computing" picture above, I simply entered the Spline Editor, chose a PostScript font (I configured Imagine to look at the PSFonts directory in my PageStream drawer, and it automatically made all the fonts
available), and typed "Amiga", stamped that down, and typed "Computing". I then grouped the two objects and used the Add Points commend to extrude and bevel the text to make it 3D. I saved the resulting object and loaded it into the Detail editor where I added colour and texture.

In the Action editor you can now associate objects with each other. You can, for instance, set a camera to follow a plane through manoeuvres without having to mess with complicated paths or tracks.

You can also create Particle F/X here. You'll find special effects like Rain, Wind,

## Can you feel it?

Imagine now sports 50 impressive new textures. Among these are Confetti, Crumpled, DinoSkin, Leather, Monster, Mosaic, Stained Glass, Bath Tile, Gas Giant, Lens Flare, Death Star, and the icky WormVein. These are all configurable and each texture can be used to create a multitude of effects.

Unfortunately, due to a change in the texture system, you can't use the Essence texture packages created for Imagine 2.0. Although they're not as necessary with all the new textures featured here, it might make bringing some of your old objects into the new version a bit more of a task as you'll need to redefine those textures. Also note that, with Imagine 2.9 at least, the
textures only work with the floating-point version of Imagine, which requires a math co-processor. Impulse hopes to make them work with the Integer version by the time that 3.0 's released.

You can now view all the textures in all of their glory thanks to Imagine 2.9's AGA support. You can render in 256 colours or Ham8. It only supports direct rendering to screen in sizes up to $640 \times 512$, though - you'll still need to render into custom sizes and use a package like ADPro to create pictures and animations in modes like Super72 or SuperHires.

Ham8 animation was bugged in 2.9 , but should be fully functional in the 3.0 release.
and Delayed explosions which can affect your objects. You can also control Emission here, so you can have particles "ejected" from an object, creating, for example, a particle-based comet-tail. (If you've ever seen the meteor at the opening of Star Trek: Deep Space 9, this is what we're talking about.)

Although many of the new Stage tools didn't make it into this release, one major feature did, which will make composing complicated animations much easier: Layers. Now you can load objects into different layers and "turn off" layers that you don't need at the moment. For instance, in a scene with a car speeding down a highway, you could load the ground, road, signs, and trees into Layer 0 , the oncoming traffic into layer 1 , and the main car into layer 2 .

Once you've placed the scenery in layer 0 , you're not going to move it again, so you can then turn that layer off so that your screen redraws will take place much faster.

A huge help in designing your scenes are the new camera and light lines. These are essentially projections from the camera and lights that show exactly what parts of the screen fall into their field of view. This makes it much easier to manually track objects with cameras and lights - now you just point the projecting lines at the objects.

The 3.0 release promises to dramatically ease creating animations, with features like Bones and Kinematics. Release 2.9 has been solid in my experience, and Impulse have managed to cram in a number of new features while actually reducing the amount of time many functions take. If you've used previous versions of Imagine, you'll definitely find this upgrade worth every penny.
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## ne

Clgoal F1 RACER This is a very professional game, 3 d graphics in a Formula one type vein as
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As usual, a high standard is very apparent in this month's round-up of software. From business to games, it seems that the unsung programming heroes of the software industry out there just keep getting better and better...

## World of Manga

## Produced by: Comax

Available from: Graphic F/X Disk No.AA 018

First up is World of Manga from Graphic $\mathrm{F} / \mathrm{X}$ who sent some interesting stuff in for review this month. This is a guided tour of what must be nearly every Manga character ever drawn.

There are 40 AGA only slides in all on four disks presented in hi-res interlaced graphics. One of the most impressive features is the superb fade thru to the next


Produced by: Instinct
Available from: Express PD Disk No. GO159

Another demo, supplied by Express PD, is Instinct, a collection of different artists' work making up a portfolio of over ten pictures.

Running on any machine, this is quite an impressive gallery with varying different screen resolutions showing different styles of computer art from Frank Frazetta copies to Walt Disney images.

The music accompanying the show is laid-back and sexy jazz-like stuff which suits the display well. It was interesting to see the reactions from the male population as it drifted across the room - stampeding feet followed by sighs of disappointment at the lack of naked women. Never mind.
> seasonal stocking to find out what the PD libraries have given us for Yuletide...

It's Christmas and Santa's dropped an extra large jiffy bag down the Europress chimney. Adam Phillips opens his
image that the programmers have managed to pull off. The transition is silky smooth and really gives the whole package a very professional look.

The only negative point is that the images are not on Amiga DOS so there for cannot be lifted out and used elsewhere.
That aside, if you're into Manga and its ultra violence, ultra titillation and pounding action, then this is the perfect companion to the video cassettes stashed on your living room shelf.

## Road to Hell

Programmed by: Philip G Harle
Available from: Graphic F/X Disk No. GA 069
Fortunately, this rather good overhead racing game is in no way related to that miserable, whinging song by Chris Rea.
Programmed by PG Harle, Road to Hell is a fast, edge of the seat, one or two-player chase round narrow bends and fast lanes to win the race and earn as much cash as possible.

Choose from the three different championships, Bronze, Silver or Gold and you're placed at the bottom of the league to take part in several races against either the computer or a friend with the intention of ending up the winner.

As race starts, the first thing noticed is the smooth scrolling and the hectic speed of the action; 180 degree corners to shoot round, kerbs to be avoided. If hit too many times, the car is destroyed and all is lost.
The action can be viewed either as full screen or split screen to see what the opposition is up to. As you progress through the game, more and more money is amassed which can then be spent in the shop on power steering, better tyres, armour plating,


No, not the M1 but a series of high speed, uncluttered without road works race courses

turbo chargers, smoke screens and what every racing sim needs, missiles to cripple the opponent. Road to Hell is packed with exciting features and professional touches that really show off the standard of shareware on the Amiga.
It would have been nice to have more cars on the track than just yourself and the rival driver but as it stands, this is a professional piece of software with attentionholding gameplay.


## Audio Rhythm 2

## Produced by: Tronix

Available from: Graphic F/X Disk No: MU 162
My suspicions have been proved correct about that cartoon character, Shaggy out of Scooby Doo - that classic program where each week a ghost/monster/ ghoul/satanic worshipper/ mummy would terrorise a hotel owner/guests/ old women/Shaggy only to be investigated by Scooby and company and revealed as an imposter wearing a suit/using mirrors/ playing horror tape effects and so on.
Throughout each episode, Shaggy was always the one cowering in the corner, saying that he would never do this again but nearly always helping in some inadvertent way to solve the mystery in the last reel.

What happened to him since his exit from the show? Well, he's moved into Amiga PD to take on his true personae - a 60s, easy riding, dope smoking, loose and chilling presenter of pumping hardcore music demos.

Shaggy is now the anchorman of Tronix's Audio Rhythm 2, offering the user five sampled tracks to listen to - Love So Strong by Secret Life, II, a remix of Janet Jackson by Brothers in Rhythm and three other tracks, Promixing, Going Insane and Hardcore2.

The samples are crisp and clear and with Shaggy there to mellow you out, this is a great buy.


## Calling all PD libraries...

and individuals with anything remotely worth my while having a peek at. If you want something released as PD, or you're a library with stacks of hot new stuff that you haven't seen reviewed in these pages yet, why not drop me a line with a copy, full documentation and everything clearly labelled. I promise I'll at least look at your work.

From music to education, business to utilities - anything you feel deserved your shoving onto a floppy disk, lemme at it and I'll do the rest. Address?
Adam Phillips, PD submissions, Amiga Computing
Europa House, Adlington Park, Macclesfield SK10 4NP

Gide your spoce hopper through the levels picking - your grubs... but keep an eye on the beetle

Sea in this demo version is to beat the bee\$to the top of the garden wall by going as quickly as possible through the 30 levels.
Power-ups can be grabbed to aid rrogress through the multitude of screens anging from pogo sticks for extra jumps and swords to slice through the enemy to invincibility from the dastardly garden creatures.

If you've got a friend round then slap a bystick in port 2 and play the special twoplayer mode where each space hopper has to grab their grubs and rush to their individual exits.
On top of this is a level editor which is anly partially operational on the demo but shows off the flexibility of the program by giving the user the opportunity to design any course they like using the in game images.
There are some nice touches with the graphics and variety in the gameplay. For a fiver, here's a neat, professional little game that's well worth taking a look at.


Shaggy smokes quietly (it ; the most reloved I ve ever seen hlm look) while you choose a groove of your own choike...freedom, mon


Sort out all financial worries with this luvely little carner

## The Small Business Pack

## Programmed by: Various

Available from: GVB-PD Disk No: U294 If you're thinking about starting a new company and are worried about the distinct lack of management programs or the prospect of coughing large sums of money up on single packages, then this offering from GVB-PD could be the alternative you're looking for.
Chock-a-block with utilities of all sorts, this is an absolute bargain at only $£ 6$. Every program has full documentation and can be printed through one of the 27 printer drivers available.

Utilities include Stockbroker for share management, expense and chequebook reports for bank account managing, a memo pad, a Secretary for efficient file and Workbench operation and many, many others - even a "nag" to hassle you

Programmed by: The Terminus Team
Available from: Pathfinder PD Disk No PG209

Why is it that many of PD's classic games are based on old, nostalgic software? Perhaps it's because they are relatively simple to program or that the writers don't have any original ideas of their own or maybe, just maybe, it's because games like Boulderdash hark from a day when gameplay came first and graphics second.

They seem to have an ageless playability that people never tire of and that can be continually enhanced and developed into better games. If you look at the average Mega Drive chart these days, most of it will be taken up with platform clones with incredibly pretty graphics but gameplay that hasn't advanced since Manic Miner on the Spectrum.

Rebouldix from Terminus Team in Sweden could, at first glance, simply be shovelled off into a hole like so many games of this genre, filled in and engraved "Here lies another Boulderdash clone - rest in peace".

Indeed, with the price tag for the full working copy being $£ 18$, you might think it would be a justified epitaph when you start


In the middile of a chain reaction...
to play. That's exactly how I felt but..
What makes this game so refreshing when compared to the usual carbon copies is that it's more of a sequel to First Star's classic than just a copy. As with the original, the player controls a little miner who digs around the screen collecting various glittering jewels while avoiding being crushed to death by rocks, traps and monsters of varying different sizes.

With this latest upgrade of an old idea though, there is much more to do. Each level on the demo disk presents a different mix of arcade skills and strategic planning. Switches must be thrown, diamonds collected in the right order, difficult puzzles solved and many other touches.

The graphics are effective and clear and are quite varied for this kind of game.

The gameplay is very challenging and it will take some time for even the most experienced player to get through the more fiendish levels on the demo. If $£ 18$ still sounds like a lot then check out the sample disk to see for yourself what a refreshing breath of fresh air this is. Recommended.

## 日PD and SHAREWARE

through the Amiga's audio and voice capabilities when you want reminding of something.
This is an impressive array of titles which cannot be given justice in such a small space - order them and check it out for yourself.

## Assassins Games

## Programmed by: Various

Available from: Assassins Disk No: 138
Assassins Games seem to push out untold amounts of games each year, some ranging from the simply abysmal to the very good (a bit like Psygnosis really).
This latest collection is a perfect cross section with the three games offering examples of poor, average and good titles.
Starting at the bottom of the quality bucket, we have a computer version of air hockey. In the original, you hit a puck that floats millimetres above the table on a bed of air which is knocked back and forth between the two players until it lands in a goal; the same applies to this version.

Being a two-player game only, air hockey is works relatively well but is unlikely to raise blood pressure and adrenaline levels above those found in a corpse. The graphics are very basic and little effort has been put into the front end of the game making this the least recommended of the bunch.

Galactoid, the second title on the compilation, is a competent vertical shoot-em-up in Galaxians mould where enemy ships sweep onto the screen, gather in a formation and swoop down on you dropping missiles.

There are plenty of varying stages with different types of aliens and also special levels where a complete wave of marauding enemies must be wiped out to receive the maximum bonus.

Finally, your single turreted ship may be upgraded into a two-gun mega blaster with the aid of a falling power up - this increases the size of your craft considerably, making it an easy target but helps to

## Jurassic Park Slideshow AGA

# Produced by: Gentry <br> Available from: Express PD Disk No : CO 14 

Seeing that Jurassic Park has managed to permeate into every corner of society from toothpaste to toilet paper, it was just a matter of time before it raised its prehistoric head in the public domain.

Maybe it's just me but I wasn't that impressed by JP (to its friends); the dinosaur sequences were superbly handled and suspenseful but as for the rest of the film, it had a slack story and some pretty manky acting, especially from Laura Dern.

The actual demo comes with a staggering four, yes, four stills from the film presented in hi-res, interlaced Ham8 near-photo quality graphics which can only be run on AGA machines. This may sound like very little but seeing that each image takes up 150 to 180 k then it's understandable.

With an accompanying soundtrack, the show is short-lived but if you're a fanatic of the movie like the rest of the planet, then this will satisfy your appetite admirably.


It's that film again... Here toura Dern tries desperately to act coringly towards a large lump of rubber


Position the turret just right and score a bullseye with a mega nuke
destroy the aliens with relative ease.
If you don't mind the repetitive nature of this genre and fancy a cheap blast then Galactoid will fill the gap until something better comes along.

The third and final instalment is Scorching Tanks, a great two to four
player "hammer the hell out of each other" piece of software.

The premise is simple - up to four tanks are placed on a scrolling landscape and must destroy each other. This is achieved by aiming the turret at a certain angle, selecting the weapon you want to use from

the vast arsenal at your disposal, choosin the power of the shot, pressing fire and crossing your fingers.

The more hits made on the opposition the more money you make which can the be spent at the armoury on projectile such as single shots, dirt balls to creat cover for yourself, mega nukes and moun tain missiles which carve out huge chunk of landscape - there are 26 offensive anc defensive weapons in all.

The presentation and graphics are of high standard - when the ground is hit, i crumbles smoothly away leaving a gapiny drop.

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## Express PD

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Gis IVSIDE
Oifi INSIDERS CLUB - Stockmarker game wher you can marape
muiti-million pousd corpuration.
966 NO MANS LAND. Good
tued with a vaicty of weyonary 2 player, one-ob-one to the death
G6t MECHFIGHT - Role Phaying Games where your character
a nobot on a hugee space crah.
C63 GROU ND ZEMO GAT
O63 GROUND ZERO GAMES as - Biq value gane compilumce.
with games like Othello. Thy Haseball, Tron 90, Frog. 22 in all.
O61 ZETS - Good purale pame. Based on a conmerial Ocran
G51 ZEtS - Cood purzle game. Based co a commercal Ok
gime. Purrnic
G55 MUSTER OF TOWN Amti social pame of propert)
G55 MASTER OF TOWN. Anti-social game of property
But fun - ASOO ONLL.
O52 BLOCKIT - Asother purzle pame atich has been cloned frum commercial game.
G.9 POM POM GUNNER
The tcemaria is Peal Hatcour

17 SEALANCE Hatbour -
submarine. Included mintited sequences
G35 JAR - Clone of me olt arcade clasik. Coyval Caviles. A bit like Pacman with 3D platform mares:
20 WELLTRIS. Temis game wit a taist. Involves a 4 sided.
G18 THE GOLDEN FLEECE $\qquad$

## masses of depth Similer style to the awanding winning Infixcme

C88 21 GAMES - Another mepa pame compiliaion with 21 game as a single didenle. Differeng game to the coes on G63
OM6 ANTFP RPG . Role plaving pme with a very similar sthe OH6 ANTEP RPG; Rofe plyying enm
and sempio to catier Ultims ganes.
G121 BIPL.ANES - Take to the skies in this one or two player dog fighting gime. -AI200 USERS, DESABLE CPU CACHES 0122 DUELL - Pain and sinuple 3-Dimeasival split screen game for Two phayers Aceh in tanks, bath with hig guns, Gasss the rea
G128 TOTAL. WAR - Compuiersed versine of the RISK

## seracily bourd pame

OIIO SUPERLEAGUE MANAGER - Footy manayement game. G138 WORL.D - Sciesce fiction iext adventure on a strange planeL GI39 CROAK. Eibanced clone of Frogeer, even a two plager
competion mode shere you complete to get as nany froger's
across at the same time $G 141$ AMERICAN FOOTBALL. COACH - Manage a NF- team and call all de plays.

GISO LEGEND OF LOTHIAN - Good role playing game
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As promised in last month's $A C$, Lightwave returns for the long-awaited definitive review. However, before the inside story can begin, a brief recap on the essentials is probably wise.
Before you can enjoy Lightwave you'll need the LightRave dongle and its accompanying control software. Once installed the dongle emulates the presence of a Video Toaster - thereby duping Lightwave into operation.

## DOUBLE

Alas as part of this deception you're required to part with a nerve-jangling $€ 399$ for a piece of plastic that does nothing more than sit in the serial port. Worse still, the aforesaid sum doesn't include the cost of Lightwave - which regulars will remember comes as part of the Video Toaster's 46 disk software compendium.

Assuming you've installed the essential emulator/dongle, the next challenge is to add the Lightwave software to your system - the word challenge couldn't be more appropriate.

As detailed last month, installing the Toaster's software isn't exactly simple. And unfortunately even after lengthy tinkering there still appears to be no way around certain limitations inherent in the Toaster's archaic installer.

Although it is possible to terminate installation prior to completion, it's not recommended unless you're particularly well versed in AmigaDOS, Worse still is the installer's unavoidable demand on storage space.

In short, if less than 66 Mb of free space isn't found on an $80 \mathrm{Mb}+$ hard disk, the installer simply refuses to install any Toaster software whatsoever.

Unfortunately due to its ridiculous design there's no way to avoid the aforementioned restrictions. In addition even when installation was followed to the letter, three out of the five machines tested with the LightRave/Lightwave combination still locked up when attempting to run the software.

To be honest there's a chance this could be caused by faulty hardware on our part -or perhaps the very early version of the LightRave on test, as opposed to a terminal problem between different machines. Having said that it would still be wise to secure a cast-iron money-back guarantee - just in case similar compatibility problems arise on your system...

In addition, when running on an AGA machine its wise to use the Double NTSC monitor driver, thereby ensuring smooth operation in the various Lightwave modes - something which isn't mentioned by the LightRave manual.

After running LightRave and entering Lightwave, you're taken directly to the program's layout screen. At first the temptation is to stay there forever as it's here where all the exciting elements such as mapping, lighting, lens flares, bones, animation and morphing await.

When all of the above are combined with approximately 170 supplied objects,


# Paul Austin puts Lightwave, the very latest Toaster-linked ray tracing and animation system, under the spotlight and asks: Can this monster topple the big boys? 



One of the few operating restrictions within Lightwave is the program's NTSC bias when it comes to available screen sizes. As a result for PAL productions it's necessary to use Lightwave's higher resolutions in combination with the program's limited region rendering.

In this example the full screen resolution is $1,280 \times 800$, as shown by the dotted grey bounding box, within which sits the $736 \times 580-$ PAL compatible - limited region

Unfortunately Lightwave's screen
dimensions work in percentages rather than pixels, so a little elementary maths is required to determine the exact scole of the necessary region - but once set elther stilts or entire anims will enjoy your designer dimensions.
layout to form hierarchical jointed objet combinations.
If the temptation of setting permanent residence in the Layout screct was simply too much, the first questio you'll ask is: "Why aren't all scene designing interfaces just like this one?

## PERSPECTIVES

Layout literally is that good. You cal edit from the Cartesian view, or in fac any one of the three perspectives. It addition when in the Cartesian mode you can view the scene from either the camen
the urge to set up camp permanently in the layout is almost too much to bear. However if and when you do manage to drag yourself away and into the Modeler, you'll find a myriad of features which put Lightwave on a par with anything when it comes to object design.

## POSTSCRIPT

In fact this latest version of Lightwave has seen over 250 improvements approximately 50 per cent of which appear in the Modeler. Notables include excellent PostScript text support, Boolean operations, lathes and extrudes, patches, twist, taper, shear, macros, ARexx, spline curves, drills and freehand sketching.

Due to available space this is only a taste of the high points which when added together with less glamorous features combine into arguably the most flexible and friendly design systems on the Amiga - possible exceptions being Imagine and Caligari. Even so, it must be said that Modeler does take some getting used too. This is primarily caused by the program's unique approach to object design. For example when building an object separate elements are created under user defined surface names - which are then imported as part of the overall object into layout where they can be selected individually for surface attributes and mapping.

Although objects can have unlimited surfaces these surfaces are not individuals within a heirarchy. In fact single objects, no matter how complex, only have a single user defined axis - no internal groups allowed... As a result Modeler's 16 foreground and background layers provide an invaluable tool when designing objects which in time will combine in


Spectacular font import, amimated ripples, a built-in procedural cloud texture, lens flare and the best animation system in the business. what more could animators ask for?

Like all the major ray tracers, Lightwave has its fair share of mapping alternatives which include procedural textures such as bump maps, ripples and fractal colours with approximately seven basic variations which can in turn be customised by the user.

In addition to the procedural offerings you can also use brushmaps elther as single frames or as part of a sequence - colour cycling is optional. To apply the brush you're given a choice between flve mapping formats: planar, cubic, cylindrical, spherical and projection.

Unfortunately basic mapping of images is Lightwave's only real disappointment. It's not that the various effects don't work, but it must be said control over images isn't as comprehensive as it is within programs like Imagine and Real3D.

It's true there are some nice effects - such as density fades and wallpapering - but due to the fact only one map is allowed per surface achieving photo-reallsm can be tricky.

On the other side of the coin, Lightwave's varlety of applications for procedural or
image maps leaves nothing to be desired. Literally every element of the surface attributes can use a map as a filter, luminosity, diffusion. specularity, reflectivity and transparency can be affected and of course that doesn't include bump mapping and the excellent displacement maps.

Displacement maps are unique to Lightwave and allow an image to be projected onto the surface of an object, at which point the lmage will deform to object to reflect the luminosity of the image - ideal for waving flags, facial imprints, landscape generation or whatever else this immensely powerful function inspires.




Here we have one of the highllghts of Lightwave's animating repertoire, namely bones. Although the phrase bones is perhops as good a choice as any, it is a fittle misleading.

In some ways bories might have been better described as muscles. For example if we return to our arm example the object axis/joints would provide the illusion of bones whereas the bones themselves could emulate the muscles that surround them.

For example, assuming the arm bent at the elbow $a$ bone in the centre of the upper arm could be scaled up to give the effoct of on expanding muscle.

In short, bones are basically an advanced form of Ireeform deformation. but in the case of Lightwave the obility deform can be very precisely controlled within animations.

To actually add bones to an object you s/mply foad It into the loyout screen, add the required number of hones, defline their rest position and scale and finally make them octlive.

Once active the bonce emilts a forceficld which when aftered by rotating or sizing directly affects the object area around it. As a result character animnatlon is quite Ititerally tromsformed.

For those interested in more than endless space shoot-outs bones arc manno from heaven. On a commerciat level the potentiol for productions in the Jif Mikro Itquid vein are endless, while animals and other organic forms can flinally cast off that roborik took and movement that often hills the Illusion of IIfe.

## TUTORIAL

$<$ perspective or any one of the lights in the scene. Once in your chosen mode you can not only edit the objects but also the viewpoint.

Better still, animation can also share from the aforementioned flexible. For example, in addition to the camera position you can also render a box or wireframe anim from either a light or perspective - great for spotting accidental collisions.

Lights can be added with ease and their attributes defined in seconds, whether that be lens flare, colour, intensity, type and even the parameters for superfast shadow mapped light sources.

When it comes to rendering, there are a whole host of modes ranging from tiny lo-res previews right up to print resolution creations employing reflections, refractions and shadows all combined with incredibly impressive anti-aliasing and shot with the camera of your choice.

Unfortunately direct comment on the quality of Lightwave's tutorial is to say


Like most modelling environments Modeler opts for a basic arthrogrophic or tri-view with an optional forth preview window, but as you can see from the example any one of the views can be expanded to full-screen when necessary.

In the top right of the screen you'll notice the invaluable layers which make complex modelling much easier. My only real complaint concerning Lightwave, and more accurately Iayout, is the inability to show objects as solids as opposed to the transparent wireframes.


Although frighteningly techle at first glance, motion control ranks alongside lens flare, depth of field, motion blur and Displacement maps as one of the high points of the system.

As you can see from the grab every aspect of motion can be controlled via silky smooth splines. Better still, everything within the scene has a motion curve - and that includes the focal length of the camera, enabling weird trombone effects and other focal tricks which can lend a real movie feel to animations.
the least a little tricky - as the pre-production manual on hand displayed a notable lack of tutorial passages.

This temporary lack of tutorial shouldn't in any way reflect on the manual - which easily ranks alongside the best in the business. The style is friendly and informative with pointers to related info where necessary. To be honest the quality of the manual is basically a reflection of the software itself. As mentioned last month, Lightwave is easily the most intuitive modelling and anim system on the market. As a consequence ploughing through the manual is kept to a minimum - with the occasional excursion required for help with the more complex modelling and animation procedures.

The big question has to be: Is it worth the money? As ever this is a horses for course decision. For the enthusiast, realistically the answer has to be no. Although Lightwave is a spectacular product it's simply too expensive for non-professionals - especially if they've already invested hard cash and more
importantly huge amounts of time mastering another package.

In addition, Lightwave is only really d its best as an animation tool, so unless that's your primary interest other programs offer much better value for money. While on the subject of the opposition it's worth mentioning the recent slash in the price of Caligari to just $£ 99$. Like Lightwave the program boasts similar heirarchical spline-based animation system and is ideal for flying logo corporate applications.

Another alternative is of course Imagine3 - which you'll find elsewhere in this very issue. If you're already a proud owner of Imagine2 the present upgrade offer is simply impossible to ignore. In fact if the new version lives up to the rumours it could completely dominate the market I'll reserve comment until I've seen it.

But even with excellent offers from the opposition Lightwave is still incredibly tempting. The design of the interface is faultless and the available features put almost ever other package in the shade.

The only program that can offer superior features such as gravitational effects and collision detection is Real3D $\sqrt{2}$ - but as you're probably aware this is very tricky package to master. In short if you're a pro or semi-pro animator who can envisage making back you investment, Lightwave and LightRave arc simply too good to ignore.


Anim previews can be created at any time and from anywhere, and played back via the umuat array of VCR controh. At yeut can see various frome rates are on hand and you akso have a choike between boxes or full wireframes.

## SYSTEM ESSENTIALS <br> RED = Eascontial VELLOW - Recommended



## The bottom line

Product: Lightwave \& LightRave
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Price: TBA
Ease of use: 10 Implementation: 9 Value for money: 5 Overall: 8

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CHRISTMAS GIVEAWAY


903

EST 1991

SEND
higa Horkbench $1,545,600$ graphics


Double click on the Printerfonts
icon to open the window

Things are beginning to click now - the haze of confusion that had gathered so swiftly on first booting up the Amiga has now begun to dissipate ever so slightly.
Admittedly, you find yourself talking about window manipulation at dinner parties and receive strange looks and questioning glances before you can stop fourself from being, well, boring.
The manual is still like a wall though jargon flies from page to page, leaving you miles behind wondering what the hell the hard drive is and why you don't have to put any disks into it.
Your newly subscribed Amiga Computing lies unopened on the coffee table, a bundle of notes to the side of it. Next to them, a large box sits with the words Wordworth emblazoned upon it.
You need to load the word processor to type up that huge pile of written essays so picking up and flicking open that magazine, you read on...

Window manipulation should cause you no problem now - if so, just dip into the manual at the relevant pages and the other remaining functions will become much clearer.
At the moment, we've been through the very basics of Workbench use but


Double click on Wordworth
Install icon

Adam Phillips puts the hard drive under the microscope for this month's dissection of your favourite
 don't have Wordworth then you'll still find that many programs - especially utilities - use a similar installation routine to the one described below.

The hard drive, as mentioned last month, is far more reliable and much faster than a floppy disk. Depending on the size you buy, a reasonable amount of software can be stored onto it.

Installing simply means taking information off the floppy disks and putting a copy of it into the hard drive. It always advisable to do this whenever you can so that the original disks don't have as much chance of becoming damaged through mishandling or dust finding its way into the disk and so on.

## POMER PERILS

Flick on the computer from the switch on the power pack. This must be done each time because if the lead is simply slapped into the back of the machine, there is a small chance of a power surge which could basically render the Amiga useless unless given extensive repairs.

The same rule applies to turning off the machine - if the power is yanked out of the back and the hard drive ticking over, there's a good chance that the information could become corrupted, lost and irretrievable. This may all sound a little ominous but it is always best to be safe so that you don't find after spending four hours typing in a journal, it becomes useless because of a split second of carelessness. Take out the

## Wractorth Installer, by Ian Potts.

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Install on floppy disk
Install printer and printer fonts
Quit Installer
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One of the Bikini-clad beauties who star in Snapperazzi

## From Dennis the Menace to the seedy world of the newspaper photographer, it's ail happening in the Amiga games world

## Vicleo Game ate my Hamster

The Sun, undoubtedly a top quality newspaper, is obout to publish its own computer game on the Amiga. Snapperazzi features a hero known as, ahem, Snazzi, and he must collect pictures and earn cash by snapping minor and major celebrities.

The major celebs are different for each level, storting with bikini-clad Poge 3 girls on level one. The girls blow kisses to protect themselves and Snazzi must dodge these to stay in good health.

Apart from Planet of the Poge 3 girls, there are another six levels to conquer which include worlds like Planet Royale and Planet Rock.

Snapperazzi has been sponsored by Domino's Pizza and Leof, who are the makers of Fizzy Chewits. Both products feoture in the game. There will be plenty of bonus and sub-games and the whole platform romp will be accompanied by specially written rave soundracks.
Just as The Sun cut its paper price from 25 p to 20 p , Snapperazzi will undercut other full price games by a fiver. Although published by The Sun, Snapperazzi will be distributed by Alternative Software. It will be available in the shops for just $£ 19.95$ and should be ready in time for Christmas.

## Menacing the masses

Did you know that over 318,000 copies of the Beano and Dandy ore bought every week? Both comics have been around for over 55 years. Did you also know that Dennis the Menace has his own show on the Children's Channel and that a Beano video has just been released by Polygram?
Ninety-four per cent of 11 bo 14 year-old Beano readen regularly buy computer gomes, so you'd think that someone would be smart enough to release a game featuring the tol ents of Dennis and his chums.

Well, as it happens Dennis the Menace and his trusty dog Gnasher are obout to start in their very first home computer game courtesy of Alternative Soffware, he company responsible for Dalek Attock and Thomas the Tank Engine. The antics of Dennis and Gnasher are being brought to the computer screen in a series of 3D isometric adventures where the gameplay takes place in Beanotown, just as in the comic.
Fans of Dennis and Gnasher, and there are over one mitlion members in his fan club, will relish the thought of being able to become involved in menacing the inhabitants of Beanotown with stink bombs, water pistols and pea shooters.
Dennis and Gnasher has over 3 Mb of bright and colourful graphics along with 1 Mb of music and sound effects. The packaging has been designed and creaied by the same artisss who produce the weekly comic
Alternative has scheduled Dennis and Gnasher for o Christmos releose and will cost you $£ 24.99$

## Core's Corkers

After three years of full price publishing. Core Design are lounching their own budget label Corkers, Corkers will commence with a collection of four cult game releases - Chuck Rock Corporation, War Zone and Torvak the Warrior

For those who can't remember, Chuck Rock is a prehistoric plaftormer fealuring a porbellied cavemen who's intent on rescuing his becuffiful wife. Corporation is a huturistic 3D adventure

which tokes you on a joumey into the vorld of Cybernetics. War Zone is eight levels of scrolling shoot-em-up action while Torvak the Worrior is a gargantuan hack 'n' slash adventure.

These tites should be in the shops now and retail at a price of $£ 9.99$. Subsequent tites from the Corkers budget abel will be releosed at a rate of between two and three fities per quarter: There is no fixed pricing for the label and retoil prices will vary dependent upon the tifle, game genre and format. War Zone and Chuck Rock are reviewed in this month Cheap Seals

Five00


팔00002000
 Cater 43

Chuck Rock


Torvalk The Warrior

## Hit for six... again!

Graham Gooch's Second Innings is an expansion disk for use with the critically oce aned Graham Gooch World Class Cricket. A number of changes hove been made to improve what is ossibly the world's best crickel gama, lougher opposition is now provided by th

squods for all 18 English counties, with botting and sowing averoges up to the end of the season. A new England squad is also induded which com prises all of the players selected for the West Indies tour
Many of these new realures were suggested by users. Audiogenic coulon't incude every idea but they plead with users to keep wriling in because they hope that one day they will create a ver on for the A1200 and CD32.
Groham Gooch's Second innings is in the shops now and wall cost you £17,99. Howzar

## Rocket and roll

Over the past few years every concept in video gaming such as flight sims, god games, platformers, shoot-'em-ups, beat'em-ups, drive-'em-ups, strategy and sport sims have all been mastered and doned several times over, except for the gaming concept of Hot Shat Entertainment's Rocket Rescue. It is an original product (gaspl) and involves skili and judgement where the ployer has to take control of a rocket ship, negotiate forcefields and weather conditions and destroy ali enemy predators.
th order to fulfit the fosks of each level, the rocket ship has to land on each planel's surface and save the otherwise doomed hostages.

Rocket Rescue simply exploits all of the hardware copabilifies of the present doy Amiga and fectures detailed grophics and an incredible amount of depth to the all-important computer gaming foctor. The game includes 100 levels; parallax scrolling, use of power-ups and weapon odd-ons, game save feature plus a humorous digitised speech and sound effects.

Rocket Rescue should be available in your local computer store now. The price is still yet to be confirmed.

## ITM/ARDS

## It's a Happy New Year, and if you'll excuse me l've still got a really bad headache. I'll get the Asprins while you look at...

## RIVMINSO R=V/ZWS O REV/IFWS

Elite 2
Yes Dovid Broben's sequel to one of the greatest games ever is finally here, but was it worth the wait?

## Magic Boy

132
While the mogician's away, he boys will play. Grab your sock and swipe up some beasties in Empire's latest plafform romp
Kingmaker.

Will US Gold's strategy board game really scrape the sky? Or is it just another yellow bellied hole digger?
F-117A Stealth Fighter 2 136
Hey there's a surprise, MicroProse hove got a new flight simulator out! Simon dons flying helmet and zooms up into the shy to check it out

Alien Breed 2
138
The sequel that every shook' em-up freak is lusting for. I's's tougher, darker, badder and beefier, but is it any good?

## Gyberpunks

.140
Toke a peek at Core Design's Manga-inspired shoot' em-up fealuring a trio of wide-eyed punks from the 501 st Cyber Assault Squad. Cor!

## Jet Strike

140
They go up liddly up in Rasputin Soltware's briliant litte arcode action plane game. Chocks away, chaps!

$$
\text { Body Blows Galactic.............................................................................................................. } 142
$$

Team 17 return with another bout of frenzied fighting and this fime the whole universe has joined in the fun. Gusp!

## Feature: Into the next Millennium.

144
A quick trip down to Cambridge to interview the men that moke Millennium tick plus a look at some of their forthcoming fitles that will shake up the games world in '94

RECULARS O RECULARS ORECULARS

Cheap Seats
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New staff member Tina rounds up the latest and downright dirt cheap games that your money can buy
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GET IT


Remember this one kids - red sky in the morning, shepherd's warning

Ihere is probably no-one who has owned a home computer who hasn't at some time or other come into contact with David Broben's troding-cum-action spoce campaign, Elite.
First released on the BBC Micro, its wire-frome 3D sent all and sundry foaming at the mouth. As a goggle-eyed 15 -year-old I spent month upon month locked away in a dimly lit room, with only my Human League albums for company.

As keen as the next schoolboy to reach the dizzy heights of Elite, this reviewer soon got lost in space. Sacking the defoult character Commander Jameson, I assumed my action herotype pseudonym, Wolf flipside.

Yes indeed, Wolf Flipside: Righter of wrongs, purveyor of purity, guru of goodness, federation freedom fighter and legion of liberation.

Well, it wosn't quite like that; there was the odd run-in with the low for smuggling the odd ton or 20 of Arcturan Megaweed, and a couple of errors in judgement due to mistokes in identifying nice, ripe, juicy traders carrying priceless cargo for nasty roughneck good for nothing pirates.

As the incomparable Wolf, I hod many exciting and dangerous adventures (well, kind of for a teenager playing on a home computer). In foct there's one particular incident that I remember with some darity.

We'd been travelling for over 20 days, the hyperspace jump from Quaxxan to Zaonce was some jount, and talk about dull. All around the half-shadowed interior of my beat-up Cobra, beer cans lay redundant reflecting the lights of the ship's auto-pilot.

In a half drunken stupor I glanced across at the long range scanners, nothing but asteroids for entertainment, and to be quite frank the novelly of zapping lumps of rock had long since dried up.

Another furn of the head and I'm gazing at the Gronk, my ever-foithful companion. He, lies snoring his little furry snout off, occasionally catching an itch up his hairy torso with a dory daw.
I begin to snooze myself, and am just beginning to fantasise about a night on Rigel 5 with the four-breasted love sirens when I hear the shrill sound of the scanner alarm. With a start I


These new fangled petrol stations really are the limit, now where is unleaded?


> After an eternity lost in space it's finally here, the game that's set to launch a thousand shutiles and keep gamers up af night without any aryogenically-induced suspended animation
jump to my feet spilling beer, peanuts and ash everywhere. Cursing my luck, the Gronk sends a proboscis from his snout looping out towards the scanner, seconds later my stomach drops as an ominous imoge materialises on the main screen.
"By the piles of the Ploeides, it's a Thargoid invasion ship!" I gasped.

The Gronk gronked (on his planet, gronking wind in a different colour expresses an emotion purple wind everywhere, as if in some woy summing up the horror of the impending situation.
As the rank air cleared around me, an even bigger stinker was dropped; a Thargoid missile was raking its way through the blockness of wytchspoce towards the ship.

In an instant the projectile had found its lock on my fragile hull. in response I hammered on my ECM (Electronic Counter Measure) and initiated my rear thrusters.

The missile exploded and rocked my croft, just


If you can't tell a star system from a lamppost, let the auto-pilot take the strain
as the rear thrusters initioted themselves. As we shot back the ship centred and put four bolts of military loser into the Thargoid's belly.

The inky void illuminated suddenly as the warship's shields failed and 100 mw of laser burned into its weak underbelly, exploding it into a million fragments of space debris.
The action over, I cracked open another "tinny" on Gronk's beak and lay back in my seot, content in the knowledge that Wolf Flipside would rule the spoce lanes for another evening.

The true actuality of the events however, was somewhat different. The reality of the situation was a stuffed teddy anteater (please don't ask why anyone should envisage this particular species of mammol should make a nice cuddly toy) and myself, in my bedroom with the curtains shut gazing at a BBC computer, surrounded by emply lins of pop - but such is the imagination of a 13 -year-old. It wasn't long after that, having


Here at the hardware store you can buy a full range of stuff to kill people


Weh-heh, look at the pretty colours as you drop out of a light speed jump
reached a rating of Elite, that my anti-grov book were hung up. But, as they say in movies, that was then and this is now.

Ather what seems like a lifetime of self-inflicted solitary confinement, Mr Braben is back with the long-awaited Elite 2: Frontier.

While in this self-imposed imprisonment, many rumours floated around as to what would eventually be in Elite 2. For instance there was talk of planet landings and exploding stars. While some of the reports were somewhat exog gerated, on the most port speculation has materi alised into truth.

The most striking thing obout Elite that you notice almost immediately is that it has no plot. At least no plot in the traditional sense that games generally follow.

## DECEASED

The only background relevant to you is that you've been left a paltry sum of cash and a mid-dle-of-the-launch-pad type space ship by your recently deceosed grandfather (didn't mean to sound ungrateful - honest pops), in a huge golaxy where you can basically do anything.

When you first boot up Elite 2 ir's quite dounting because you just don't know where to stort. To tell you it's a vast game area really is an understatement.

In the original Elite there were eight galoxies, in Elite 2 there's just the one. However, it's as accurate to the genuine article as amateur accurate to the genuine aricie as amaicur
astronomer Mr Braben could render it, and contains $200,000,000,000$ ( 11 zeros) stars with some 30,000 inhobited planets.

So you can immediately gather that to get anywhere of any status in the game is going to take a litite bit more effort than the usual climb e few ladders and blast a few boddies molarkey.

After you've come to realise your own pelly insignificance within this massive areno, the next task is to decide what on earth you're going to make of yourself.

In the original you reached the top notch through a combination of fighting, dever trading and maybe a touch of under-the-counter smuggling.
Well in the sequel those elements hove been retained, and you could easily play it in the some manner, but would be missing a great deal of the


Trading in the galaxy's come a long way since the original Elite


Was the local chart, you can zoom in on Werluct and target your auto-pilot
thing intelligence that exists within it.
ball intense and purposes Elite 2 has recreatCasew life in a universe of the future. The polit. 1. Wrastructure that exists in this time is one of -4 wor espionoge and assassination between - Fitderction and the Empire.

One of the mony decisions you can moke is to -Wirm lasks and work for one of these two - goverments, in a woy pledging allegiance.


Ah, one of the true stellar delights of the solar system, Saturn's split ring
Undertaking work as on agent gives financiol reword ond also rank; the more suceessfil missions you corry out, the higher rank you ochieve yyes, ir's not just the Elite rating that's importont in this tite).

In the original there were only a sporton number of missions lit. ton number of missio
tered throughout a vost universe.


Amazing map views of the galaxy, including a zoom shot of the spiral arm naked

Elite 2 has literally thousands and includes over 70 different types of mission.

On landing at a space port or one of the mony orbitol spoce wheels, stations and cities, you con occess a bulletin board. If's here that much of your destiny



## Elite



Eh up, there's trouble at mill, them there pirates are taking pot shots at my space station
$>$
you're successful you'll soon be on contract killing missions or sent to destroy an enemy spoce station.

Obviously, the stock market aspect of litie is still in existence. However, fundamentol changes have taken place since the heady doys of the 80s. For one the prices at each location are no longer static.

What this means is that because prices behave like a real stock market, you could actvally sit at one port buying and selling commodities for profit, without actually blasting off anywhere.

## DRAMATIC

The other probobly immediate difference to the troding aspect of the game is that the range of products has increased dramatically.

The same is true of equipment that can be bought from the stations around the goloxies. For instance, if you wanted to become a space taxi then you'd have to purchase passenger cabins.

You can also upgrode just about everything to the nth degree. From engines to lasers and missiles the list is almost endless. It's even possible to purchase something called a Hyperspace Cloud Analyser which checks where a ship has gone once it's in hyperspoce.

But, I've left the best till last, because in Frontier you con octually upgrode your ship. No longer do you have to stick with the Cobro, and
there are over 30 to choose from.
the choice really is yours - you can stick to nimble acrobatic combat single seaters or get yourself something a little more substontial like the 2,500 tonne Ponther (Volvo of the future) for extensive troding.

So you can see there's an absolute crater full of things you can do in Frontier, but the question that's positively bursting to escope is: What does it ploy like?
When you first start controlling frontier irll feel very alien and different to the Elite you knew so well of yesteryear. For one, the simulation of spoce travel has been mode much more realistic, with zero grovity and directional energy having a lot more relevance than in the original.
This at first is off-putting and somewhat confusing, but don't be disillusioned by it. It doesn't toke long before you get into the swing of flight or the icon control system employed for occessing charts and equipment. In fact, it soon becomes a very logical system which feels second nature.

It's incredibly difficult to describe what play. ing Frontier is actually like once you've become odept with the controls. I could give you some long-winded narrative (me?) full of superatives and theatricals, but I think iv's for bether for you to find them out for yourself. Let's just say that you get intensely involved in motters.

Visually, Frontier contains some of the highest detailed polygons your likely to see on an


Unlike the original, the rozzers now have their own Portakabin

Amiga. From the huge space wheels to the domed cities on the planet surfoces, if's all there in beoutiful light-sourced technicoloured detail.

One of the most visually impressive aspects to Frontier is that you can be out in the depths of vacuous space pointing your ship at a prick of light some six light years away. Then fly at it and warch it grow - you might eventually end up at the window of some complex on the surfoce of the planet.

## ASTRONOMICAL

Everything being astronomically correct, you can watch nighifall from one of the moons of Saturn or orbit Jupiter and follow the red spot.
For a game to handle so much, there has to be some piffall. It has to be said that on an A500 machine the update is a rather slow affair and behaves like a bit of a lame mule. However, detail levels can be turned down, and this does speed the general pace of the gome up.
Frontier is on incredibly difficult tifle to brack. et. There are many different styles of game in it, and many different ways in which you can approoch it.

It's also quite tricky to come up with a superlative that encapsulates (serious word time folks) the total feeling that Elite 2 generates. It has everything really - great grophics, vast play area and an on-going depth that immerses you further the more you play.

In a word, Frontier is unmissable. II's a star of
a product that burns brighter and with a greate mognitude than any other product has for many a year, and you'll love it.

SIMON CLAYS

| VISION |
| :---: |
| GGOGGOG |
| AUDIO |
| GGGGGGGOO |
| DIFFICULTY |
| GOGGOGGOO |
| LASTABILITY |
| GGGGGGGGGG |
| Undeniably another all-time classic in the making from Mt Braben. Great graphics and absorbing plor Frontier the ultimate space ence - ever. |

Publisher > Gametek
Developer > David Braben
Disks > 2
Price > $\mathbf{\$ 3 4 . 9 9}$
HD install > Yes
Size > 1 meg


Sir, I have it on main screen now... it's a giant peanut moving at a tremendous rate of knots.


A very stylish Cobra Cabriolet attempts an extremely complex docking manoeuvre without an auto-pilot


Bizarrely enough, the status screen tells you your status

## बP

## WHEN THE STR:F JUST AINT TOUGH ENOUGH... GO PLAY IN THEF PARK

## IF IT'S NOT JURASSKC PARK ITS EXTINCT



Magic Boy puts you in the unlikely control of an apprentice wizard with the equally unlikely name of Hewlett. Now little Hewlett is a student at sorcery schoot and this is the first thing that needs oddressing.
It mokes sense to me that if you are going to oltend magic school you need on entrance qualification. Now, I don't how about you but when it came to decision time af my comprehensive concerning your options, ' $O$ ' level mogic was not on the list

English language, maths and even religious educction yes, but no insight into the world of orcone knowledge - well not ot my working class, stole run seat of leaming
However, it would be interesting if such a topic was an exam subject, beccusel I for one would take
Imagine the exam, you wolk on to a fanfore of tumpets wearing o patched up cape, top hat and obligatory white gloves (all courtesy of Mr. Hoofey). Along side you your gold bikini clad assistant, the becutiful sixth form bobe Jane Hedey-Heder-Smyth-Smyth (she lives on the nice estolote.

As the rest of the school look on with mouths gaping wide open, you embork on your first examination trick -sowing the beoutiful lane into segments.
However, becouse of the govermment cutbocks in educeion tpending, al is not what it should be on the props front, for one, the box into which the sultry Jane muss sip her lender self into is courtesy of the second yeor croff deportment.
These particular pieces of fimber lived their former lives as part of a firont gate and the remnonts of a sledge involved in a freok downhill accident. But anywoy thanks to the tolents of Form 2B, the box is reody on exam doy, albeit suffering from chronic dompness and splinters.
A drum roll commences and Jone slides into ploce, simultaneously your mokeshifh sow mokes is oppsarance to cries from the cowd.

To be honest these aren't shrieks of horror of the size of the sow in your hand, but cries of astonishment thol you're going to ottempt this oct with o craft knife from the ard deparment.
As you moke your first incision into the jogged slets filed into the box, your unviting ossistant jobs her shapely posterior on one of the many splinters. The next few moments seem to last a lifetime, as Jone jumps in poin the croff knife slips and locerctes her thigh. This in turn dislodges the box which topples sidewoys to reveal a hollow plinth, where

## Izzie Wizzie lel's get busy, err...

 Open Sesame with Magic Boy's staff of power, that or just stick the disk in your drivethe slightly wounded Jone stands sobbing into a pair of dummy legs.

Those fateful tew maments hove sedled your fale, and put the dampers on your dream of a coreer in magic. Think, no hope of going prematurely bald, "not a lor" of opportunities for having the worst catch phroses in show business and best of all absolutely no chance of marrying your mutton dressed as lamb ossistont. Anyway, once more
their seems to hove been a quite mojor digression from our starting point. To recap, Hewlett is top dog at sorcery school - ir's a bit like Fame with wands and cauldrons. He's passed all his exams and pipped the moustachioed David Copperfield to the number one spot despite his
impressive vanishing of a jumbo jet up his magi circle.
Despite being Merlin's lixte pet things oren't total bed of roses. You see, one evening Hewle stoys behind to swol up on some book or other. A he rummoges through the cupboord where ever


One small step for mankind, but a big one for Hewlett


Magic Boy works out on the treadmill


Something fishy's going on in this plaice. Cod knows I've hadd-ock enough
the born free ethic and is more concerned about not getting into trouble with teacher.

To achieve his Hewlett must recapture all of the marauding menagerie and return them to their environment ou natural in the cellar
As Hewlett your search will take you through four main worlds. They consist of Sand Land, Wet World, Plastic Ploce and Future Zone, and strangely enough they all really do speak for themselves when it comes to what kind of environment they are.
Now, each world is made up of 16 levels. This might shatter the illusion of the plot somewhat, but then again we're talking about a plafform puzzeler


Ooh, the crabs - scritch-scratch. Magic Boy picks up a double dose on the rocks


Der-dum... der-dum... der-dum... dum, dum, dum... err, Jaws I think
worlds you are asked to complete done so when you visit for the second time you explore a second set of eight.
To access any of the levels you simply highlight them on the compass screen which clever clogs Hewlett carries around with him.
Basically control of the play is fairly simple and straightforward. All the normal joystick movements push Hewlett in the relevant directi ons and pressing the Fire button shoots his love wand - they don't call him Magic Boy for nothing you know.

Hewlett's wand has a range of power ups which lengthen, strengthen or sproy his shot wider and all help stun the animals.

Once they are stunned simply moving the would be wizard into the stunned creatures results in them being bagged up in Hewlett's magical sock and hence recoplured.
As usual in this form of zap-puzzle-plafform scenario there are a number of things which are helpful and some which are a pain in the magic circle.
For one, there are lokens to collect which when completed grant you extra lives. On the downside their are dissolving plaftorms, sticky blocks, toxic poots and trap squares to be aware of.
Graphically, Magic Boy is very sweet and sug: ary. With his blonde hair sickly smile and red cape Mogic Boy is a dead certainty for a cutesy award.
This doesn't say a lot for his big magic wand pretensions, but his snug tunic (which could easily pass as a skirt) does keep it firmly lodged in the right place.
On a more serious note, both the scrolling and animation are really rather nice on Magic Boy and despite my allegations directed towards his manliness the whole feel of the product right.
Playwise, I've never been a great fan of platformers of any kind, but I do acknowledge that they have a massive following among gamers.
I also have to confess that I actually enjoyed playing Mogic Boy. The control seemed to respond really well and the puzzle aspect of the game mode play a lot of fun.
With 64 levels and 32 bonus levels to explore there's a great deal to do in Magic Boy. If's a very


Oh, it's clammy in here
Friendly and easy to ploy fitle with a lot to offer plaftorm lovers.
It sounds good, ploys well and its so annoyingly cule you almost want to retch. Pus, the first few thousand copies feature a free copy of the Cool Croc Twins. What more do you want from a game?

SIMON CLAYS

VISION
GGGOOOOOO

## AUDIO



DIFFICULTY GOGOGOG000

LASTABILITY GGOGGGOOO

Nothing in particular to write home obout - just good, honest

79\% platformer with decent sound and graphics, and the odd fwist to elongate its appeal.

Publisher > Electronic Arts Developer > Dinamic

Disks >
Price > $\$ 25.99$
HD Install > No
Size > K meg

## Kingmaker

There are hundreds of gamers out there who love strategy games. Unfortunately most of them have been stereotyped by o lot of people. Yes, ifl asked you to describe a stralegy games fon off the lop of your head you'd probobly scy that they wear onoroks, NHS specs, boladaves, ill-liting trousers, have spots and har bour a fondness for troins.
This is not the cose, although there are probably a few "onoroks" out there who give strolegy fans a bad name. There is definititly a stigmo attoched to the name "strategy", but hopefully US Gold's Kingmaker can do somathing to try and gef rid off
or at leost dentit?
In-tecent fimes, the computer strolegy market has seen the movement away from "hex and square" super detailed games (SS1-style war games) to grophically competent products with very user: Friendly control systems. Products such as Powemonger and Civilization hove been amazing successes and show just what you can achieve with a strategy game.
Kingmaker is a strategy board game that has been on sole since 1974. Excuse me for being ignorant, byt the only Kingmoker I'd heard of was the loputidie band, but older members of staff do voguely remember it.
The board game is an obstract recreation of the choos, wor and intrigue thot epilomised the period of British history known as the Wor of the Roses.
In four turbulent ploys, Shokespecre portroys the War of the Roses as a conflict of treachery, murder. fearsome vengeonce and bloody battles. For those who lived in Shokespeare's ero - a century later
the Wars were a time of vidence, devasto tion and anarchy. Only when Henry Tudor killed Richard ill at Bosworth did these evil fimes come to an end. For those bold enough, the War of the


Roses provided oppratunities for advancement and power os established nobble fomilies fell by the way side and local rivals were stbin.
Hands up who now thinks that a strotegy game about the Wor of the Roses woild be noff and not interesting or exciting in the slightess? Ifs almost like finding out the Shokespeare isn't boring and is, in foct, more like an odde worlde Quentin Toranhino.
Kingmoker kids off with a fancy intro presented by Williom Shokespeare who is accomponied by a series of digitised pictures detaliling the occurrence of the War of the Roses.

## ROYAL PIECE

If's then right down to business and you cre presented with the main screen which is split into three sections. Your objective is to control the last surviv ing royal piece and so become the undisputed King of England. You are in charge of a faction of nobles representing actual historical personalities from 15th Century England.

Kingmaker occurately reflects the changes in strengths of the foctions as they are decimated by battles, plagues and failed ransom attempts, or have new honours bestowed on nobles with attached troops and castles US Gold reckon that most people lose interest in other strategy titles because their artificial intelligence programming is weak, meaning that the ployer can learn the "perfect" strategy. Kingmaker is different from its rivals because

The start of
Kingmaker and you begin to split your nobles into factions

> A strafegy war game based upon the War of the Roses that features intrigue, factional politics and bloody warfare. US Gold's newie certainly isn'\$ cricket!

there is no such thing as a perfect strotegy. As a general rule, board games don't translate to the home computers very well.
For starters you lack the humon interocion which makes them so enioyoble. Secondly, there inn't a lot more a computer game can do that the boord game can't and the board game will probably cost you a lot less to buy.

Kingmoker, fartunotey, features a lot of features that wouldn't be possible to achieve with a board game, such os toctical combat and cinematic action sequences. Instead of a battle being lost on the tum of a card, you con now light and decide the batle


By clicking on a noble's shield you can obtaln some helpful information


The start of the "turn" pliase and you have the perfect chance of conquering Ipswidt. Fun? I should cocot
for yourself. The computer's artificial intelligence has been carefully designed and tries to recreate humos thought processes as best as it can, and so can reos fovourably to an ever-changing toctical and stroter gic situation.
A nice litile touch is the in-game help feature. An important objective of the compuler game was ts moke the game occessible to novice strotegy gone players and this wos ochieved via a help or "chront de" system which prompts players at key points is the game with suggestions on strategy and toctic This can be oltered to different levels depending of wheher you're an expert or a beginner.
It also means you can practically chuck the weighty manual in the bin, but it does contain o wealth of historical information and sests the almos phere ond scene, as well as more detailed instuc tions on how of play the game.
Control of Kingmaker is via the mouse with e completely intuitive icon system that gives you eary access to all of the game functions. As mentioned before, the game is ployed on a digitised map d the UK using "counlers" represented by the 100 pes cent accurate heroldic shields of the historical nobles.
Severol of the towns and cities have digitised pic tures of the historical castles or cathedrals in exis tence in the 15 hit century. All this detail is ven impressive and gives a good feel to the game.
Before you heod off inlo oction, a menu asks you to select the number of foction (1) , 50 ) you foce is the game. The more focions tife ctimputer controls, the tougher the game becomes although the computer-controlled factions pele ogainst eoch other just os fies

## Kingmaker



Waiting for the computer can be a long process, so why not go make a brew and decide what to do next? No stress! No problem!


Time for battle to commence. Note the handy help screen at the top. I, err, wasn't using it of course - 1 just thought I'd show it you. Ahem


Thanks to the power of graphics and animation, you can fight your own battles rather than have them decided for you on the turn of a card
hey compele ogainst you.
As mentioned previously, to win at the game you nust control the last royal heir. To ochieve this you nust copture and control an heir, eliminate all his/her rivals and have your heir crowned king in a cathedral town or city by an archbishop or two bishops.

Planning the risk-free capture of an heir is one of he most important parts of the game's opening period. Your faction's opening dispositions and moves thould be geared primarily towards the copture of at least one royal heir.

## VARIABLES

Choosing the right one is a question of bolancing a number of variables. How close are the forces of apposing factions? How well guarded is the heir? Is there a noble in play who can copture the heir easily by virue of an office they hold?

In fod, Kingmaker is a game where questions like these arise on every turn and decisions must be mode which will, in turn, decide your victory or defeat.
For your first few games, the right stralegy might seem bewilderingly obscure. Until you get used to the game you are advised to sel yourself a simple
goal and go for it. You'll soon get used to the advantages and disadvantages of certain combinations.
Kingmoker is relatively simple to use and control, but you'll have to spend many a long hour at your monitor screen before you'll be able to master it.

On my first go I played on the easiest level and managed to beat the computer (hey there's skill for
youl, but on the harder levels I was like a fish out of water.

This is perhops the best way to go obout playing beccuse if you leop in at the deep end you tend to stumble your woy through and in furn leam about how to play as you progress. There is always the Help option available and the computer opponent tends to be fairly slow, so it won't defeat you in a

couple of turns. I could go an about US Gold's strotate? gy jount for ages because there is a ton of intlomotion to tell you, but lock of spoce prevents this ond irith get fairy boring anyway. Conclusion fime it is, then.
I must hold up my hands and admit that Kingmaker is a damn fine strategy game. I found myself engrossed and determined to see the game through to the end wheher I won or lost.
The graphics for the main part are foirty bland, but that's only beccuse they were tronslated from o boord game. The introduction of the digitised screer livens things up a bit and the battles are well anima ed, if not a bit slow.
There are also a few choice animations slapped i there for good meosure; the execution scene being good example. The sound is sparse, but os the boorc game distinctly lacked noise I shouldn't grumble tod much.
The only reol complaint I have is the foct that the computer does toke rather a long time to decide what to do next. This does give you the ideol chance to plan your next moves, but after a while it gets on your nerves.
Kingmoker impressed me and coming from someone who is not overly fond of strategy that can only be a good thing for strolegy fanatics, who are going to love it. Obviously is's not going to appeol to everyone, but if war/strategy is your thang then youll be more than hoppy with Kingmoker.

```
JONATHAN MADDOCK
```


## Faction Build Key



This returns you to the Faction box where you can moke changes to your foction's line-up. You can also use the review function to observe where other factions have their armies, and where the royal heirs are.

## Family Tree

荿空This lists the royal heirs, by house, in order of precedence. Where a royol heir has been killed, that charocter's name is "crossed-out". If coptured by a faction it is indicated by a bor in the colour of that foction. If crowned king, the character's name will have a crown beside his name.

Secret Support


During the Reinforcement phose of the game, foctions moy be joined by oddifionol nobles. These can be brought into ploy by clicking on this icon.

## Chronicle Key

(2)
By using the menus you can discover detailed information about various parts of the game. To read about an item all you have to do is click on it.

Review


This allows you to discover the whereabouts of royal heirs and enemy nobles.
Where is?...


Use this to track down nobles, royal heirs, bishops, towns or anything else currently in play.

## Save Game options



You con store up to 8 saved games allowing you to stop and continue play when you feel like it. You can also restore a saved game from here.

## Game options



From here you can restart the game, quit, toggle sound on/off and alter the auto-help setting.

## Fresh Horses

Fresh Horses allow a Faction to move twice as for in one go. This icon records how many fresh horses your faction
hos.


## VISION

## GGGGGGGGO

AUDIO

## GGGGGO O

DIFFICULTY GGOGGGGO
LASTABILITY GGOGGGGGOO

Kingmaker is a damn
fine strategy game and will appeal to beginner just os beginner just os
much as the expert $\left(\begin{array}{ll}0 & 0 \\ 0 & 0\end{array}\right.$ handy Help option.

[^7]when you think of flight simulations, the first compony that springs to mind is MiccoProse, purveyors of such quality prod. ucts as Knights of the Sky, F-15 Strike Eogle, F-19 Stealth ( $F$-117A's forerunner) and the legendary Gunship.

More recently, Dogight and the highly popular Gunship 2000 hove groced the shelves, and indeed the top of the charts of your local soltware emporium.

When you glance at that list it mokes foirly impressive reoding. In foct, he only two products that have come out of the MicroProse stoble and gone slightly lome on toke-off were the overambitious Flying fortress and the underreted WWI flight strotegy Ancient Att of Wor.
It seems that for quite a while now Microprose hove churned out nothing but extrovogonzos in the air, and they appear to have approached every conceivoble flight simulation feasible.

What could they possibly simulate this fime? They've done them all - modern warfare in the skies, old-style dogighting, fighter simulations, bomber simulations - he lot.

What could be next? Ater several hours of rocking my brain, thinking of every conceivable type of military and commercial jet known to mankind, I finolly hit on what it was that

MicroProse were going to simulate this time around.
Yes indeedy folks, MicroProse are proud to present their latest true-tolife fight of fontosy Codename Flying Rat. Pigeon Simulator.

MicroProse are guaranteeing that Pigeon' will be able to totally accurately replicate the real McCoy. IVIl come equipped with a modern chipseeking beck, one gammy leg, people-finding guided excretion missles and completely knockered wings IVm not sure they all hove, but they do where llive).

Beginning os a young chick, youll stort ot the flight egg-codemy where youll leorn fight theory. From there irs on to serious missions as a rookie.
Starting on single missions youll begin as a young flying leomer. Youll be set such tosks as basic bock garden toke-off ond londing manoevvres, moving on to lond-on-the-garden-fence stunts with enemy ginger Toms crowling all over the ares.
Poss these bosic lests and you'll be sent into oction in one of the many town centre zenes. Fly dangerous bombing missions around notional monuments such as irofolgor Square, using your loserguided excretion missiles to seek out restly caiffred hair.
Avoid being squashed by the troffic as you

Your gevthour wes cilvedraff homas os Lyay bocidn and kis tou to $=2 \mathrm{c}+\mathrm{t}$,

Play Tarzan as you swing from a helicopter


The main roster room or have I just got back to my Magaluf hotel foyer three sheets to the wind?


The mission briefing tion. It also makes all

woddle around roodsides in an attempt at being the dumbest crecture on two legs.
fly life-threatening sorties into political hotspots around the world. Flop your woy into the for East and avoid ending up as Bombay Duck.

Entoy the comal pleasures of reproduction and push your flight skils to the limit. Flop carefully as you attempt the highly risky mid-air-link-up with the hen of your choice.

Plus, in true Microfrose festion, all the oction can be viewed from a multitude of angles. Some of the most interesting are the external shots, especially the pigeon's bombsight view.

Actually, imogine my surprise when their new product turned out to be not a pigeon simulator, but in foct F-117A Stealh Fighter. Emvisage my work.

immediate disoppointment at finding out the there would be no emv, duck or owl dato dithe fust another oercplane sim.
However, the Steolh fighter or Nighthouk (sounds like one of the Clodiaters) is no ordines) plane. During the Gulf Wor it proved it we enlicly worth the massive investment by is mer ufocturer, loch heed.
Although there were only a handful of the involved, within hours of the first doy of war that hod complatly crippled the freqi air detence menterner

Hoving llown invisibly through hundreds dA miles of clecronic eneny eyes the F-117As hod poved the way for the rest of the coallion oir force and given the allies almost total oir supremocy.
With this type of success it now comes as me surprise that MicroProse opted for Stealith as opposed to the pigeon simulator.
As is usucl with MicroProse products, Sted comes with a manvol absolutly commed to then rofters with information about the plane, it equipment and armoment.
Ahter this spurious form of troining it's time : amberk and march in hobincied book down b the main roster room.
The first thing to soy is thot F-117A is not one but two simulators in one. The moin MicroProse simulator has a bios towards action, combot ond missions.
Conversely, the lockheed version is much truer to reolity, but features less dogighting However, on both versions you con toggh through and odjust everything from the ground detail to the skill of the enemy.
Once you hove decided whether to toke redism or oction you can toke a stroll into the com monding officer's office fhoving knocked first d course) and choose a thectre to opercte within.
Now, the interesting thing obout F-117A that unlike most sims, it has different dimension to its level of confict. You con opercte in a coll war state or go for full-blooded, all-out conver tioncl warfare.
What this means is that there are for mon

## F-117A Stealth Fighter



Here's the bit when you screech away from the lights ahead of the Capri with your jacked-ap suspension and stereo blaring

# STEALTH FlGMTER 

> Second time around for MicroProse with the Stealth Fighter, the big question being: is it still healthy to be stealthy?
mission types af your disposal. For example, in a cold war scenario you will be sent on more surveillance missions where the emphosis is on discretion.

You can also select more specific aspects to the mission, like whether it is an air-to-air dogfight or a target strike mission.
As you've alreody probally gathered, Stealh has a million and one options to choose from,
and every conceivoble setting to ploce yourself in.
There inn't really spoce to go through all of the choices available, but rest assured you hove every ype of rocket, missile and munition to ponder over.
We've been ossured that this sime the interior of the Strallh is as accurate as can be ochieved on a computer screen. This is becouse the progrommers actually got the opportunity to cimb


Always the same on these bloody ferries, park you bumper to bumper
oboard the real McCoy and study it of close range.
Ploywise, F-117A has all the fectures you've come to expect from Microprose. Internclly oll of the advonced technologies you'd expect are included on Stealth. It has state of the ort HUDs, rodars and armoment focilities for you to play with ond proctise on.
To fly successfully you're going to need all your fight sim skills. While the Nighthowk has oll the up-to-the-minute technology, its realism and the amount of buttons you have to opercte make it a tough litle cookie to handle.
During the missions the action comes thick and fost, with you up agoinst some of the top strike circroff in the world like the dreaded Mig-29.

The grephicol world of the Stealth fighter is vost, deteried and very deverly blended into the missions. For example, when your mission brief is to destroy the polatiol residence of Soddam Hussein, you gel a full view of Boghdad as you fly towards it.
On all mochines the grophics are prelly slick and well defined. While Stealth obviously per; forms a lol quider on the A1200, the stondord Amigo handes it prety well. This is no meon feat as the amount of ground detail is high.
There are some really nice touches within F 117A that warm you towards it, especially the oltention to detoil. For instance, when flying in one of the oil rich nations, don't be surprised to

## Tread the boards in all these theatres of war


see rigs scattered lett, right and centre.
Also, on night missions you'll see on extremely picturesque moon and star-filed sky, which moke for that litie bit more redism.
Over the yeors there's been a whole squadron of flight sims, some good, some bod and some indifierent. Stealth Fighter definitely comes under the heoding of good, beccuse it contains that lifte bit extro.
Grophically the engine is reminiscent of Gunship 2000, which con'l ever be a bod thing. The difference is that Steath is a more polithed product.

On a personal lavel, I prefer Gunship 2000, but that really is a slighty unfair comporison os it is the top sim on the Amigo. For Steclth to hove even hove entered the same runwoy as GS 2000 is soying a lot.
Stedth Fighter really is a qualiy product, and will thrill iet flight sim enthusiasts all over the globe. I suggest that oll you budding fighter pilots don your dook and stoaltily step out to buy this oxcellent filght simulation.

SIMON CLAYS


## VISION 000000060 AUDIO बGOGGOGOCO DIFFICULTY  <br> LASTABILITY जGOGGGOOGO

Stealith Fighter is a quality game. The graphics ond sound

## $010 / 0$

are first rate and the
are lirst rafe and the
playobility will keep you strapped up in your pilots seat for a good while.

Publisher > MicroProse
Developer > In-house
Disks>3
Price > $\$ 34.99$
HD Install > Yes
Size > 1 meg

> Team 17 rełurn with another feisty and atmospheric bout of frenetic alien blasting

Fverybody knows that Team 17 ore one of the elite componies in the soffware business and I don't want to woffle on for ages about how good they are. They seem to know what the public wont and provide it with amozing grophics, sound and ployablily slapped in there for good measure.

Alien Breed is still one of my fovourite games ever, not leost beccuse it was a snecky intercoctive rip-off of the film, Aliens, by James Cameron. One thing that was consistently present in the film was almosphere, and luckily the film version did tronsmit successstlly to the screen.

The original Team 17 blaster fectured two morines colled Johnson and Stone who ventured forth into a stotion called ISRC-4 which contained on Alien Breed. Johnson and Stone wandered through six massive and hugely challenging levels fighting aliens with all guns blozing.

Alien Breed wos probobly the first product to really set the Team 17 success ball rolling and proved to be an immensely popular with the games buying public. While everyone wos eogerly awaiting the sequel, Team 17 did the unexpected and released a superior and enhanced version of Alien Breed at a budget price. Most


You've entered the complex and it's time to make those alien beasties eat lead
companies wouldn't even dream of doing that, but Team 17 manoged to hit the bull's eye and Alien Breed Special Edition has been ot the top of the budget charts since November 1992, breaking the record for the longest stoy at number one. The Special Edition fectured more oction, more atmosphere, more gomeplay, was a bigger gome
to boot and at only $£ 10.99$ hos to be one of the best value for money games you can buy.
A mosterstroke hod been pulled by the lods ond losses from Wokefield, but the general public was gosping for the "proper" sequel and now after almost 22 months of despercte waiting it is here.
IV's been nine long years since the first outbreak of aliens when Johnson and Stone crushed the invosion on a remole space research stotion.



One of those nicely drawn screens that connects the levels on the A1200. A500 owners will note a slight loss of colour on their version



A handy map that tells you where the terminals and places of interest are
now select Ruffertoo and Zollux.
Ruffertoo is an intelligent lizard lifeform while Zollux takes on the form of a tough war robot. You may find it best to experiment with combinations of characters that best suit your style of ploy before you start your mission properly.

When you begin the game, you are lowered by a Federation dropship onto the landing pod of the Alpha-5 base. Your mission will be as the brief outlined to you by the Federation before you start to kick alien ass.

With a silly inane grin spread across your face you decided to check out this second bout of Alien Breed tomfoolery. Starting outside the base you get the chance to boost up your supply of cash
and keys while desperately trying to avoid the gunships and meleorites that fly overhead.
Finally you discover the exit and immediately tense up because you know in just a few seconds time it will be time to foce the cliens once more.
Exploding onto the next level you are immediately faced with one of the rasping beasts Instinctively you grab your machine gun and plough a ton of lead into its disgusting alien body. One down and only thousands to go!

Wandering around the level you find that you can once more gain access to the Intex 4000 computer terminals. For those who don't know anything about Team 17's originol alien blast'- $\mathrm{em} \cdot \mathrm{up}$, the Intex 4000 s

Smile for the camera Mr Alien and, err could you wipe that acid drool off your face...
were a source of supplies.
Once you've logged onto the computer network, you can order extro weoponry, key pocks, ammo packs and such like. The weapons are available in three stoges. Each is more powerful, but each stage uses up more ammo, so î's up to you which weapon you choose.

The Intex terminals also supply your marines with information on the current mission and gives access to the Info bose which is a large source of information about the game. For the truly dedicated "breeders" out there there is the option of looking at your current statistics and status.

## BRILLIANT

I had only played Alien Breed 2 for ten minutes and I already knew it was as good as its predecessor. It plays just as well as the original Alien Breed, and that is a good enough reason for me to pour superlative over superlative onto the sequel.

Alien Breed 2 is no better than or worse than the original product - it is just as brilliant. Obviously the graphics and sound are better than those seen in the first game a couple of years ago.
I could grumble and whinge about the fact that the sequel's graphics don't seem to be as dark and moody, and thus are not quite as atmospheric as those from the original.

But that's not to say that they don't look exquisite though, especially in the A1200 and A4000 versions of the game. The A500 does suf-

## Cens

fer slightly from colour loss, but nothing that's noticedble straight awcy.

The static screens in the A1200/A4000 are for superior to the A500s, but its all rather superficial as you're normally too busy rummaging through the levels blasting aliens to take any notice of the static shots.
Alien Breed 2 features a more varied count of aliens and levels than its predecessor. In fact there are many new features, and it still retoins that fresh feel of originality which captured the hearts of hungry litte gamers a couple of years ago.

Any self-respecting Alien Breed fon will hove already rushed down to the shops and bought this one, having had it on order for the last six months. The only gripe I have about Team 17's sequel is that it is bloody hard, but hey, that's probobly just me being completely useless!

I don't need to tell you twice to buy Alien Breed 2 because it is so good. Fans of the original will fall deeply in love with it and want to have its children while newcomers will wonder why they ignored the first effort. The Teamies are going from strength to strength, and at the moment look completely unbeatable.

JONATHAN MADDOCK


Here we destroy some brand new aliens



Our three intrepid marines start their wonderful adventure. Wide-eyed cuteness ahoy!

Ever since the introduction of Akira to our television screens via the power of video, the world has apporently gone Manga crazy. These sophisticated and often vident "cartoons" ore currenty the hippest thing on sliced bread.

It seems that the game designers who crealed


If only all aliens were as cute as that then Ripley would never have had all that trouble


## Blast away in Core Design's new shooter that features a trio of Manga inspired heroes...

Cyberpunks for Core Design hove cought the Manga bug. Cyberpunks looks like it has been heovily influenced by these dynamic Joponese films, especially when you toke a squint ot the gome's charoders.
Roo, Bee and Gee are part of the 501 st Cyber Assault Squad and they hove to rompage through five oction-packed missions in order to rid the universe of the toughest of alien enemies.

## TELEPORT

Eoch mission consists of three to four levels with the option to teleport between decks. While fighting the alien beasties you con obtain weopon power-ups, force-field keys, smart bombs and time-distortion cubes to help you complete your quest.
Missions vary from investigating unknown power surges at the Sub Alomic Reactor Station to rescuing a top computer scientist at Spoce lob Genesis 8 where there are hundreds of drooling dien life-forms.
Cyberpunks is farity unique because you control three characters all at the same time.


The three Cyberpunks try their best to look 'ard as they travel to the next level

Sometimes it mokes life eosier, sometimes horder ond that is whot mokes this blast' em-up work.
The best way I can describe Cyberpunks is by calling it Alien Breed for kids. The game would definitely appeol to the younger gamer olthough older users with a taste for this kind of thing might foncy a dabble.
As I mentioned at the beginning, the grophics

VISION GGGGGGGGO AUDIO
GGGGGGOOO

## DIFFICULTY

 GGOGのGGOOLASTABILITY GGGGGGGOO
Cyberpunks is a fair-
ly unique blaster with
a Manga-esque feel
to it, but it is more
suited to the younger gamer.
Publisher > Core Designs
Developer > Dinamic
Disks > 1
Price > $\$ 25.99$
HD Install > No
Size > / $/ \mathrm{meg}$
have been highly influenced by Mange and this tends to give the game a cartoony feel.

Cyberpunks is a fairly competent blaster and the ability to control three characters is a nice touch that makes it stand out in a crowd. Younger gamers will be more than happy with Core's shooter, but older gamers might want to think twice before buying.

JONATHAN MADDOCK

sions demand a balance between both skill and toctics to complete. Jet Strike is a unbelievably big game and the gome's creators reckon that it will take an average player many months to work through all the combat missions.

Just like Bip there is a twoployer option in the form of an Aerolympics competition. This lets you and a chum to toke it in turns

## Alternative go up tiddly up with their latest flight game

game with a difference. In Rasputin's flight of fancy you must stop the devious SPUDD forces by attocking them with your, chem "borrowed" aircraft.

Your commanding officer will give you a mis sion objective which you have to achieve without dying. Simple? Hmm, not very. First of oll you have to learm how to fly the aircrat; this is not an easy task and one which you must persevere with.
Pushing the joystick up rotates the aircraft anti-clockwise while pulling down rotates it dockwise. This system sounds a liftle strange at first, but once learned it allows you to control the aircroft with an amaring degree of occuracy.

There ore over 135 missions and you get a choice of 40 different aircraft lincluding the surreal dragon option) to fly in them. All the mis-
to fly ten aeronautical test against the clock. The aim is to get more points than your opponent and this is achieved by doing the tests quicker and, err having the ability not to cresh!

Jet Strike is an original piece of software and one I would heartily recommend to any gamer. The control syssem is difficult, but Rome wasn't built in a day, so you should be able to put up


All together now! Those magnificent men in their flying machin...

## with it.

The grophics are really cool; although they're quite small they are wonderfully detailed. If you're looking for something a bit different this month then toke a quick squint of Jet Strike you won't regret it.

JONATHAN MADDOCK


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e Pasputin Satware 1993 Rospulin Sottware is a troding subsidary of Power Label Imited



Azona
The rock chick of the crew, this moshing extra from a Mad Max movie is also from the planet Titanica. Equipped with a hoverboard, she has some
naff albums and a naff albums and a
bullet-belt.

reolly differ playwise, bul does feature extra colours on the bockdrops, better quality music and souped up sound effects.
All of the oction tokes ploce over six different planets. Each planet is the host to two different champions. Each different planet, apart from Earth, hos on environment which reflects the attributes of those inhobitiants.
For example, the planet Titanica is the most machologically advanced, and the two guardions d the planet are Tekno and tazor.
Now, there are a variety of ways to play Galacic. In one-player mode, hoving chosen the charoder that tokes your foncy, you journey from world to world in an attempt to defeat eoch com-puter-controlled charocter.
In two-ployer mode you both
doose a character and select a
planet to fight it out. You can even hot things up to a higher temperature by selecting the same char. acter, so you both hove excocly the some moves.
There's also a toumoment mode which allows a greater number of your motes to batle it out in a leogue offoir. You con also change the amount of time you compete for, the number of rounds you fight for and the rather interesing Mercy option.

In Mercy mode your opponent will leave you alone if you toke a big shot on the chin and need a breather. On the contrary, leaving Mercy off means that when you're down and winded your opponent will come steaming in for the kill.
On the charocter front, there's a very interesting selection for you to get to grips with. Rather thon the normal selection of martiol arts experts and kick-boxing freaks, in BB Golactic the choice is much more varied.
Of course, Dan and Junior are versed in these particulor stills, but the other charocters are different aliogether. There are robots, dinosaurs, puppets and all forms of elementols.
However, the most amozing chorac ter in Galocic must be the stunning Kai-Ti. This womon must surely be the most perfectly pert set of pixeds I have ever seen on a home computer. Not only is she beautifu, but she is also os deodly as a female black widow, with some absolutely devastating moves.

Speoking of moves, eoch charocter comes equipped with 20 dif. ferent moves, blocks and dam-age-inflicting blows. These are arrived at through a variey of ioy stick movements and button presses. Each character's moves hove been


Soy! Big Trouble in Little China
in a kind of watery way
Iy, Body Blows Goloctic is the best beat'em-up ever to be inserted into the drive of an Amiga. OK, so is older brather Body Blows, ond $\mathbb{K}+$ were both prety hot, but Body Blows Golactic tokes the ifite. Please, take my advice and visit your soffwore emporium now.

SIMON CLAYS

## VISION

 0000000000
## AUDIO

 0000000000DIFFICULTY 0000000000

LASTABILITY 0000000000
This game is going
to go down as the
best beat-'em-up of
63\%
'93. If's an all kick.
ing, all punching, piece of poweredup perfection. Make your best special move and buy it.

Publisher > Electronic Arts Developer > Dinamic

Disks > 1
Price > $\$ 25.99$
HD install > No
Size > 1 meg


## Michael Hayward • managing director

CAMER How and why did Millennium first start up in business?
Millennium started up four and a half years ago through a management buyout of the entertainment division of logotron Lid, an educational software company.
The three principol directors of the company, lan Sounter, Henry Elliot and myself were excited obout the prospects in the computer and video games industry. This decision has proved to be hard work, great fun and profitoble for us all and we wouldn't want to do anything else.
CAIn\#? What were the early days like when competing with industry giants such as Ocean, US Gold and Psygnosis?
We have never been concerned with the competition and what they are doing. If we were we would not be oble to produce original games such as Pond, Pinkie, Diggers, Brutal Sports etc.
CAPIIG? Games-wise, what wos the big breakthrough for Millennium?
Jomes Pond 2 was the big break that we needed. It has now sold over one million copies on all formats and gave us the confidence to go on to produce the offerings that we have lined up for 94 and beyond.
Cannir With what do you attribute to the popularity of the James Pond series of games?
Everyone knows what a secret ogent is obout so it was easy for people to relate to Pond as a charocter. He is well animated - particularly in Pond 3 where there ore over 130 animation frames, this brings out the adaptability of Pond and allows us to participate in his efforts and humour as a super hero.
Ithink that it is important that Pond always has a special property-in Pond 2 he could stretch using his extendosuit and was able to run fast, in Pond 3 he con walk ypside-down run twice as fast and uses mony novel vehicles. This odds to his oppeal as the small, brove agent working against seemingly impossible odds.
CAMHER Millennium was the first company to enter into the CD32 morket. What was the reason behind this move?
We think that the Amigo market is essentiol to the growth of the computer and video games industry. Beccuse there is such a good strong base of Amigas in the UK we hove a strong culture of very able programmers. That is one of the reasons that the UK is prominent in the world of solfware? development.

The CD32 is a well received development from Commodore - the hardware is powerful and the added CD facility allows us as developers to explore new ways of delivering our titles to the markepploce. I do not know whether CD technology will become the standard as the occess times of the game cartridge is much quiker than any known CD technology at the moment and speed is an essential part of game development.

CARHE How risky is it to move into new markets such as the new CD plafform?
Ir's only risky if you do not know what you are doing. It would be easy to get corried away and invest in live action, model building and cell animafion in the belief that this were where the future lies. We have opted to invest in sound, animation and rendered grophics. This involves a great deal more cost, but as we are only concentrating on these areas we have a smaller learning curve than by trying to do everything. We are currently investing in some state-of--the-ort rendering workstations which will improve our productivity fenfold in the coming year on our rendering projects.
CAMIRAR Are you surprised that other componies hoven't got their products out on the CD32 yet?
No. There are so many plafiforms in the marketplace at the moment with new systems to be introduced in 94 and 95 . In order to be successtul it is

"We want to be a world leader in
entertainment software development - just watch this space!" - Michael Hayward, Millennium MD
imporfant to concentrate on what you can cope with at any one time. We have been writing "legal" operating system code for the new Amiga chip see and it was not a big deal to move onto the CD32.

Other publishers who wrote stroight to the Amiga hardwore have obviously experienced a new learning curve so naturally it has token them some time to get up to speed with CD32.

## CANIR How do you rate the standard of your competitors?

The compettion is getting tougher all the time, there are so many good games now being produced it raises the stakes every fime we develop a new titite. This is good for our customers and for the industry as a whole.
CAIVII What is the future of computer gaming?
The next two years are going to be very interesting. There are several new
hardware plafforms slated, Sega Saturn, Nintendo 64 -bit, Sony CD, 3DO and a new and more powerful CD32.
The added power of the new systems will allow us to produce bigger and better games designed for a brooder audience. I say this as l assume that the troditional market will extend from the bedroom to the living room and more people in eoch household will become interested in what we have to offer.

One thing that is important to keep in mind though is good old -foshioned gameplay. It is all too eosy to produce some floshy visual effects with these new hardware platforms and to forget what the gaming experience is all about.
CAMn=R Where and how do Millennium see themselves involved in that future?
We want to be a world leader in entertainment softwore development. We are investing heavily in our development department and have some fruly amazing products in development - just watch this space!
CAINIR What is your philosophy as regards product plocement and marketing?
It is imporfant for our trade customers to know that Millennium is a good lobel that produces high quality products which sell. So at that level it is important for us to have a good profile.

As for as our customers are concerned the label is of secondary importance - the products themselves and our charoders are the heroes. Does it make any difference to someone who wants to buy the latest Michoel Jackson album what the record label is?
It is very important that James Pond, Pinkie, Brutal Sports Football and other Millennium brands have a high profile and that our customers know who they are and what they stand for. We spend a great deal of fime and effort to promote our titles and as the market develops this investment becomes greater.

CAMIR What is your fovourite Millennium game and why?
My fovourite has to be James Pond 3. Two years in the making it is very different to both of the previous games. All of the code, maps and graphics are new, In Pond 3 we set out to produce the ultimate platiorm game.

There are over 100 massive levels with over 65 enemies. The story line is essentiol to the game with dialogue boxes oppearing at key moments to give the player feedback and dues. Pond is bigger, he has a girffriend Angelfish and a new sidekick - Finnius. There are literally hundreds of secret rooms, chambers and blocks to discover.

There are several ways fo complete the game so the ployer will not have to mop his woy through $[$ it in a linear fashion. Even our game testers who had been playing the game doy in and day out for weeks were consistently discovering new feacures. It is a game that you can keep coming bock to for more and more.


Keith Smith - PR manager

CMME? Why do you think that James Pond and Robocod sold so well across all the computer/console formats? $?$
He has become a legend. The first game wos deverly marketed and did not overexpose James Pond. The games alwoys relied upon the gameplay and not the charader. Anybody can trot out "culesy" characters that are running on a standard platform engine. Each James Pond release has offered tremendous value for money and intense playobility.
CMMER James Pond is probobly one of the oldest and bestloved Amiga characters. Why do you think he is so popular?
He is so popular beccuse he gave the Amiga a character that owners could call their own. The games have gone through several focelifts for owners of different hardware, for example, the A1200 version of Robocod was significantly enhanced to show off the equipment.

The CD32 version included animation and had an interactive book. James Pond has always offered great volve for money on the Amiga that console players would not get.
CAMM R? How will James Pond 3 be different from the first two games?
JP3 is rodically different. If follows on from Robocod through the use of cell animation and tokes Pond to the moon. Dr. Maybe is mining the planet for its rich dairy product reserves and has kidnapped two F.1.5.H. agents. The main sprite is so much more animated and can run faster than any other game charocter, punch, pick objects up and throw them, run upside down and use the many new weird pick ups in a game with over 100 levels.

It is huge and will take most players at least a couple of weeks to complete. We are also giving owsers the F.I.5.Hpack free of charge. That alone is worth $\mathrm{\Sigma 9.99}$.
CAMns? The animation used for the CD32 release of Robocod was very impressive. Will we be seeing more of this in Pond 3?
Yes. The animation is a great link between Robocod and JP3 and will oppear on the CD32 version to coincide with the release of Commodore's FMV (Full Motion Video) card.
CAMEIR How do you see the Amiga market progressing? Will CD technology slowly become the standard plafform for games?
I used to work in the video industry and it doesn't take a rocket scientist to work out that, being a linear format, video does not allow you to skip around programmes and interact with it.

The major Hollywood studios ore all developing CD products and I will put my neck on the line and say that it wan't be too long before you will be oble to buy the film, the book, the soundrack and the game all on one
format and played through one mochine. CD offers us, as developers, so much more flexibility. We are developing projects currently that will be a mix of animation, film and computer-generated graphics giving players an amazing amount of gameploy that floppy formats and cartridges cannot offer.
CAMER How hard or eosy is it to market a character like James Pond?
Markeling James Pond is always slightly difficult becouse he's never around when you want him. Obviously, the fact that every game is better than the previous one helps becouse people know that he is dependable and offers greot entertoinment.

However, we never rest on our laurels and are always working on the profile. We hove to bear that in mind when we license him to different formats that companies such as Ocean and Electronic Arts are buying a reputation as well as a great game.

"...there is a bright shiny four-inch wide and disc-like future for us all."

- Keith Smith, Millennium PR manager

AAMER Do you think that Pond 3 will be a bigger seller than the incredibly popular Robocod?
We certainly hope so! There is no reason why not. Robocod has now been licensed on 14 hardware plafforms and has passed the one million unit mark. If Robocod can do it, Operation Starfish will.
CAME Mr Mogoo is the first licensed game that Millennium will publish. Whose decision was it to publish a licensed game and why use Mr Mogoo?
If you look at the profile of Magoo especially in the States, he is one of the most recognised images, along with Coco-Cola and Elvis. He has always been a bumbling old fool who accidentally rights wrongs and talks to hat
stands believing them to be policemen. He is the spokesman for General Electric, RCA, Timex and several other mojor US companies.

He has been in existence for nearly 45 years and is a household name throughout the world. Amblin entertoinment (Steven Spielberg's company) are also producing a Magoo film which will help the awareness of him to games players.

We've always been on the lookout for good licences, but when Michoel Hayward was approached by UPA he felt that this was too good to miss.
CAMER Millennium were very eoger to show their support for the CD32 by releasing Diggers, Robocod and Morph for Commodore's new machine. This is nof normal behoviour for a company who can't afford to waste money, so why did you leop into this new marker?
Commodore had the bottle to go aheod with the first 32 -bit CD console and when someone is that committed to a project, it's hard to refusel
It was a sound business proposition, but if everyone sits on their hands and says "we'll wait and see if everyone jumps", then you end with one less innovative hordware company and no games for a project that should, in theory work.

At least we can scy that we gave Commodore 110 per cent backing all the way to the lounch, and you don't get respect if you don't try.

CAMER What will the future be like, as for as computer games are concerned?
As long as we can prove to the powers that be that we can police ourselves and we don't let the porn merchants succeed, then there is a bright shiny four-inch wide and dis--like future for us all. One thing that affected the video industry was by allowing it to be manipulated by the pornographers and schlock merchants.

Everyone then associated the two and the slide began. Only now is it beginning to reclaim lost ground through a more respectable image and after monumental losses of revenue.
CAME? What part will Millennium play in the future of computer games?
Millennium will always play an octive role in the industry, producing Iruly innovative games using the most up to date technology worked by some of the UK's best programmers and arfists. So there!
GAMER will 1994 be the yeor of Milemium?
I think we've hod a pretty good run this for. Millennium has experienced considerable growth in some of the toughest conditions through fight management while retoining the independence to move with the market.

1994, however, will see some of the best ever Millennium games, that we think people want to play. We all enioy playing games here and hope that everyone enjoys our games as much as we do!

## Mark Rafter - art director



What is your bockground as for as art and animation goes? I studied at the Royol College of Art, doing a BA and MA in pointing. After this I did a further course in Design at the London College of Printing. After that I worked in animation for three years on feature films and TV.

Ceyer it's very unusual for a campony to hove a specific art deparment. Why hove Millennium leoped into the world of animation?
As for as I know, hoving a specific ort department is unusual, but with the demand for better graphics and animation, il's got to be a good thing.

CNMER What ore the advantoges of hoving a full-hime orr department?
Someone is alwoys ot hand to offer solutions to design and grophic problems os they arise.lengthy high-class animations
will undoubtodly go hand in hond with the new CD technology. How will these altribute to the success of a game?

Animated intros/outros on CD products enhance the game by expanding the storyline which gives the central charocter a past or a future. I's creating a whole world if you like, rather than just a game.

Chant How do you transmit your ideas from poper to pixel?
Over the pixel artist's shoulder!
Casge What are the benefits of having a "real" ortist work on a game rather thon just $a$ "pixel" artist on his/her own?

Itry to put a broader prospective into a game, the big picture; how one part relales to another, rather than just the detoil.
"...as far as animation is concerned, yes, the sky's the limit'

- Mark Rafters, Millennium art director

CNERER How involved do you get when working on a game?
I try to get involved as much as I can with the look of each product, but es I have up to five or six different games to work on at any given fime, I'm moving about quite a bit.

## Cyynir What was your design brief for Pinkie?



Pinkie already existed in the game, it wos my job to storyboord the animated intro sequence; for this my brief was to show his bockground, where he come from, what mokes him tick, his charocter, courage, culeness, attitivde and determination.

How much of Pinkie's world and Pinkie can be attributed to you?
Almost everything in the Pinkie intro animation is my invention, his house, the interior of his room, his gorden, in foct all of the scene selting.
Cunref How does the world of a soffware house differ from warking in an animation studio?

A lot of fun, theve more of a say creatively. I'm not just part of an impersonal mochine.

The grophical world in Small Furry Creatures will be represented using works by some of the old masters. Why did you decide to use this kind of art? Small Furry Creatures (working ifite) is influenced by old master painting, but I felt the game needed a radical new look that would suit its storyline.

## Couner? in the future do you think that we will see games that will play and look like something from the Disney/Sullivan Bluth studios? <br> I think games involving characters like James Pond and Pinkie will become more like interoctive cartoons, os for as animation is concerned, yes, the sky's the limit.

## Millennium softography

| Title | Released |
| :---: | :---: |
| Xor. | Jan 88 |
| Quadralien | May 88 |
| Sargon 3 | ..May 88 |
| StarRay | Oct 88 |
| StarGoose. | Dec 88 |
| Prospector | Mar 89 |
| Archipeligos. | Apr 89 |
| Eye of Horus. | Nov 89 |
| Starblaze. | Nor 89 |
| Bod Company . | Jan 90 |
| Kid Gloves. | Mar 90 |
| Cloud Kingdoms.. | Apr 90 |
| Resolution 101. | Jun 90 |
| Thunderstrike | Aug 90 |
| Yolanda. | Sep 90 |
| Manix | Oct 90 |
| James Pond | Nov 90 |
| Horror Zombies. | Jon 91 |
| Warlock | Feb91 |
| Moonshine Racers. | Mar 91 |
| Stormball | Apr 91 |
| Robin Hood. | Oct 91 |
| Robocod. | Nov 91 |
| Kid Gloves 2 | Mar 92 |
| Steel Empire. | Apr 92 |
| Global Effect | May 92 |
| Aquatic Games. | Oct 92 |
| Rome AD92. | Nov 92 |
| Morph. | Jun 93 |
| Robocod A1200 | Jun 93 |
| Robocod CD32. | Sep 93 |
| Diggers CD32 | Sep 93 |
| Brutal Sports Football | Nov 93 |
| Morph CD32. | Nov 93 |
| Diggers A1200. | Oct 93 |

## In Part two...

We talk to top games designer lan Sounter about Small Furry Creotures (working fith) as revolutionary new piece of software involr ing the use of artificial intelligence. We alse look at Mr Magoo and dhat to Marcus Broon obout Millennium's first licenced game.


## Pretty in pink...

During our visit to Millennium it wos almost impossible to walk anywhere without hearing, seeing or treading on something concerning this little pink chappie.

Pinkie is Millennium's great pink hope and it is envisaged that he'll be bigger than James Pond Ino mean feat with over a million copies sold).

Although Pinkie is a plaftorm hero, he is radically different to anything gamers will have seen before. For a start he has no special powers - he can't jump from a height and squash enemies or shoot things at them.

He can't run fast, climb high (allergic to altitude) or fire weapons. In fact, pinkie can't really do any-
thing malicious because he's also allergic to pain (tell me obout it) and despises violence.
But he is intelligent, thoughfful, inquisitive, gentle and most of all concerned. The plot will see Pinkie
expressing his worry about the imminent demise of the dinosaurs throughout the universe.
So, he departs from his beoutiful native planet Pink and sets off to secure dinosour eggs and briny them to the sanctuary of the serene planet Pink.

Work is well an the way in Pinkie and already one can see the benefits of using a trained movie arimator. His movements and characteristics are some of the best live ever seen on any computer, hone arcade or otherwise. Pinkie also uses a most unusual colour scheme for its locations and backdrops Although still in the development stage, they look gorgeous and you can tell the eye of an artist troined colour has been employed.

Pinkie has secured licensing deals on seven other platforms. Pinkie looks as though he could be major siar for 94 and leave Millennium Interactive well and truly tickled pink.

"Go past the buffet car, toilets, first class, second class, scum class and there you are". Yes, it's the Cheap Seats, and Tina the Train Driver ushers you into the Budget station!


Erm, Chuck's chin looks familiar. Not unlike a certain football commentator, wouldn't you agree?

## Chuck Rock Corkers • $£ 9.99$



He's fat, he's hairy - no, it's not Danny Baker again, it's Chuck Rock and he's back via Core Design's new budge label, Corkers.
Well, as if you need reminding, the basic plot behind Chuck Rock is that Gary Gritter has kidnapped Chuck's wife, who promply sets off through the neighbourhood to find her. Ach true love, hey? (Or perhaps Chuck just has a fetish for wandering around in a green leaf skitt and thrusting his belly into small, furry animols..)
So, off he sets through five increasingly challenging levels of wocky animation to rescue his babe-licious wife Ophelia. The headbangin', belly-buttin' Chuck has to pit his wits against
homing pterodactyls, flames and mudmen to name but a few, which he can belly bult, throw rocks at or kick. There are also some humorous end of-level guardians who are nice and tricky.
If you missed this tite last time around then it is a must. It is bigger thar Chuck's belly and jam-packed full of superb animation with oodles of great gameplay. This is not to mention the great soundtrack and cartoony effects as well. Phew what more could you ask for?

Right, imogine the kind of torture you would hove if you were trapped in a room with Heinz Beans' chief fosters, whose idea of tun was to liten to Agodoc confinudly while waiching re-nums of the Bobby Dovros Rock with Loughter show. This is the same degree of owfulness I thought I'd hove to go through when I first started ploying Parasol Stors. At first glance the graphics are


## Parasol Stars Hit Squad • £9.99

garish and unimpressive, the tunes grating and there are no proper baddies to get your teeth into. But I plodded on and to my wurprise -ance l actually realised whal was going on -1 storted enioying the game
This is the third in the series of Bub and Bob games, the aim this time being to defeot the monsters with your magic parasol, and thus free the universe. You get eight different worlds to

Oh dear, Bub is having a problem handling his parasol. Watch out for those buses

explore for your $£ 9.99$ and can even toke your fiend along if you dont like playing alone. There's a bonus level and plenty of collectable objects suct os magic shoes, power hearts and mirade icons.
How long the game will keep you amused is questionable but it worth a look just for the unusual gameplay and stange choice of enemies, such as grond pianos, helicoplers, and ploying cards.

## War Zone • Corkers • £9.99

Well, if you foncy a red Mission Imposible, this is tho game for you. If your ideco of fun is a thootem'-up where it is vitually impossible to avoid the enemies' bullets, and every fime you pick up a decent weopon it is token away again if you get hit, then go for it. But for us mere mortals this game leans heovily on the 'yikes, this is too difficult's side.
Visually it is in't bod, but if you like to see blood and guts splattered then youll be disoppoined, ond some of the enemies when shot look more like they re playing point boll then having iust been obliteraled by a flome- thrower.
There is a good selection of weopons to choose from which offer a good renge of sound effect. Fun con be had in two-player mode where players need to develop a "cover my back"-ype strategy, so beware if your comrrade is the mean type who goes around tiying to hog all he bonuses ond upgrades which can be found.
The levels indude warships, ungles, swamps and sewers, and there are different types of enemies, ronging from those that can be seen off by just one blast from your big weapon to those needing a more advanced method of diminotion.
This is quite good litle shoot-m'_up which is rather oddicive buit for most

it will prove to be o bil of a lough customer.


Bet he drinks Carling Black Label...

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| :---: | :---: | :---: |
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| THE GREATEST only C19.99 Jimmy Whites Whirtwind Snoover. Lure of the Temptress and Dune | AWARD WINNERS only $£ 16.99$ Kick off ll, Pipermania, Space Ace and Populous | 2 HOT 2 HANDLE only C12.99 Golden Axe, Total Recall. Shadow Warrior, Super Off Road Racing |
| $\begin{aligned} & \text { STRATEGY MASTER only C21.99 } \\ & \text { Deuteros, Populous, Hunter, Chessplayer } 2150 \text { and } \\ & \text { Spirits of Excalibur } \end{aligned}$ | SUPER FIGHTER only E16.99 Pittighter, W.W.F. Final Fight | MEGA MIX only E12.99 Leander, Agony and Ork |
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| SPORTS MASTERS only E19.99 PQA Tour Goll, Indy 500, Advantage Tennis and European Championship 1992 | ANIMATION CLASSICS only E27.99 Space Ace, Dragon's Lair li, Wrath of the Demon | ACTION 5 only C19.99 Rick Dangerous il. Ghostbusters II, Ounship, Super Ski and Hard Driving |



Ihe first and most important thing to realise is that although money is impor tont its no wubstite for power. Begin the game by bosing yourself in luebek. Hoving borrowed an appropriate amount of money, start troding between luebek and Wamce.
Take wine or solt from the former, and wood and wool from the second. At the beginning of the gome you should concentrate on shifing dheop goods such as soli and com. Low price means low risk and high quantities.

Look out for the arival of the spice fieel. If you choose "Quick Stort" the spice fleet will Ahady hove docked in Bruge when you begin.

When the fieet dods you should soil stright there and buy os much pepper os you con, then stoy in dock for a couple of weeks. You wil then be able to sell the stock for wice what you paid for it.

There ore oher commodities that will provide you with an equally speedy way of rendering yourall solvent. However, you must byy them in the corred locations. For example, buy furs in Nowgorod and sell them in London. Purchase wine in Brugge, ofl in Bergen ond hemp thmm, sounds the fon) in Donrig. Buy sat in twebeck and sell it in Slocktolm.

## LUXURIES TOO

But there is more to trading than maling o fost Tholer. You must also impress the townsfolk wih your octivities. Il you only deal in essentiod goods such as meat and lish you won't got yourself noliced, or remembered. it's worth bearing in mind that a lilite flair moy be colled for, and a pitife trading in luxury goods.
Once you hove enough money, a wise woy to spend it is on more ships. By for the cheopest and fostest ploce to do this is in Nowgered. AI you need to do now is lood yoursell up with hemp, os all the other moteriols you need should be localed in the town.
Deoling with the scum of the seven seas is definitly a risly business. Bot, if you ore willing to toke a chance you could end up witi on entice
fiee of ships for next to nothing
Hand over a fully-rmed ship and crew - as for from home as possible - and the pirate will sell you every ship he coptures, for a pittonce. On the ofter hond, he may disappear and never be seen again.
Alemalively, set up a guard ship in front of the town you know the pirates ore heoding for and attock them os they enter the port.
If you win the botile you will not only get to keep their ship, but also gain the gratitude and admiration of the townstolk. This aspect of events is an invaluable commodity.

## DODCY DEALS

Alwoys ensure thal you hove enough money in the office ond thot you con repoy your debts on time. Keep your ships in good condition os deterioration in their condition will reduce their copocily.
If you hove a ship that is a complete wreck just sell it. Selling ships at ouction is a good woy to make money. Here you can bump up the prices of your boats by bidding ggoinst yourself - but you do need to be very quick on the keyboord.
However, heed this worning: Don't bid too high or you moy end up poying for a ship you

dreody own. As with most red life, the easiest way to become popular is to spend money on peoph. In the Patricion, this is best ochioved by throwing a party.
II you're hoving problems with the calering side of your shindig, then here ore some involvable fips. For one, build yourself a worehouse and hide 30 burden of the following items in it Meet, fish, ole, wine and corm.
The best days to throw a feast are berween the 24th and 31st of December. Where wed. dings are concemed the same cotering arrange ments apply. But why on eorth should o swash: budkling weollty businessmon tike yourself even utter such a dasperale word?
Whih oll the odvanteges you hove bestowed on yourself you should be out there sowing your wild oats at one of your swinging parties, insteod of siting in front of the condle being henpecked ty frontid Wh bat bide you will be clit is the ginine widow or a borgemon-what no Thoi vigins?
On the plus side, as a dowry you will receive two large ships land a fug boct if you indude your new bride).

To become Aldermon you need to be moyor of your homelown, and hove on excellent reputation in several other towns. Join as many

## cheat

yilds as you can and trode between os many towns as possible.
An important fip here is to be generous with your wealh. While we redise this will hurt, if you wont to succeed in Patricion we're afroid it's o necessary aspect of ploy.
If you want to see results you should spend around ome milion tholer on the town initiclly aboll 15 wition the scoend fine and abour 3

## millon tirin

Use your warchouse Bevieg dhop popucts Hie cercol and storing it will reverin in memployees you hove roken on processing products like beer from it.
There ore mony unpredictable clements in the game. Disaster or good fortune moy strike at any lime. However, one thing becomes blatanty cleor the further you get into the gome. The deeper you go the more dangerous it becomes to tronsport goods. Equip one of your thips to leod a convoy and you not only redua, the risk, but also gain popularity.
Remember at oll limes the mon key to success is popularity.
For a successful attempt at Patrician it's impertant to start business in the right town. Lueheck is as good, it not better, than most

## At Iast after going broke time

 after time, help has finally arrived. Yes traders, a complete guide to getting rich, making friends and influencing people...
## Akeer's Island

Retum SE to the corridor with hondles. Go due N into the possage and follow the corridors to the W. Beware of the destroying Wizard of Choos [prepare psychic protection). Kill the wizord. Pick up hreasures ond skull.

Return to the passage entronce. Take the corridor to the SE. Beware the dangerous mogi: cion. Kill the magicion. Secret passage in one of the walls; click on the bution under the eagle-heods.

Continue along the corridor to the N . Ploce the six skulls on the six scoles. Continue dong the corridor. Kill the guard. Pick up the relic. Retum to the londing-stoge. Re-enter the town.


## Jon's Island 1

Find the passoge to the West and head along the road. Watch out for the dwarves os they alwoys try for the kill. After a while tum North inlo the mountains.

On the way you'll poss two cul-de-socs, West and Eost. Take each of them in tum and pick the edelweiss plants. Go bock to the end of the passage and head East, watching out for the vulures.
Go North into the mountains and find yet another edelweiss. Go South back to the passoge and keep on Eost. Toke the first path North and then go East and you'll find two more of the precious plants. Watch out for the curse that lies in the orea; try to cast a curse-lifing spell prior to entering.
Because of the alfitude you may find your characters being affected by verrigo. Avoid this by drinkking onti-vertigo potions. When they toke effect, continue higher up the mountoins. Collect the relic at the end, then return to the harbour and heod for the North-West landing of Jon's Island.


# Ishar II 

Here is the concluding part of the complete guide to Daze's brilliant adventure game. Enjoy!


## Jon's Island 2

At the harbour heod West along the coost twa When you reach the Mountoins to the Eost, $\mathrm{F}=$ must dismiss one of your chorocters. To mole mothers worse you must strip them of oll their gold and possessions.
Heed through the mountoins to the Eote watching out for guards. At the end of the pet you will come across five pillors and a deat druid. By this stage you should have fiw relics.
Ploce a relic on each of the pillors ond th druid will be re-incamated. Recruit him one treat him nicely. Heod back to the harbor stock up with supplies, rest ond perform al other bodily functions. Then heod for the fortress on Olbar's Istand.


## Zach's Island

Go bock to the ity onee move. Heod for the dothes shop and buy five evening tunics. Dress in your new garb and wear the pendant given to you by the Ent. Do this before you enter the Blue Velvet nightidub; here you will find one of the Fortress parchments.
Check finances, as you will need at least 20,000 coins for the next part of the quest. lifyou don't hove enough, then indulge in a killing and robbing spree in the city until your finances are sufficient and your bloodust satioted.
Next, go to the alley of the four towers which is North-Eas of the harbour and wait until two in the morning for the suspicious character to oppear.
If you've been one to enter as many pubs as you can during the game, chances are you'll have met him before. Give him your 20,000 coins and he will give on important item.
Go to the herb shop and buy the ingredients for five antivertigo potion, othenwise known as Mildong. Eat, sleep and head for the North-East side of Jon's Island.

The end of the quest is neoring, however this is the deodiliest ond most demonding Islond of all. First thing to do on this island is to fight the Fire Elementol. This is easier said thon done because to kil the Elementol you must hove one of your charocters hold the mogic shield while someone else casts a fire protection spell, then step forward and strike.

At he first cosssoods, turn right and follow it around the block until you reach on opening to the North. When you reach the next crossroods turn to your West if you foncy more experience and treasure.

Once you've exhousted the maze retum to the crossroods. Go North to find the one of the toughest creatures in the gome, a firebreathing dragon.

Use the same method as you did against the Fire Elemental to defeat the drogon. He moy toke quite some time, so be prepared to toke a couple of steps backwards to heol yourself.
After the defeat of the drogon, heod North. Examine every nook and cronny in the walls beccuse there are hidden treasures contained in a good many of them.

Shortly you will reach onother crossroods. Heod North, then watch out for a secret possoge leading from the North woll. Follow this secret passoge, fighting oll the skeletons and wizords en route. When you reach the end of the possage, enter the

## Olbar's Island

moze. Beware this is no ordinary moze, as most of the wolls are invisible doors - so mop carefully. At the end of the maze pull the handle and fight your woy bock to the crossroods.
At the crossroods go South, then stop when you reach a room. The wolls in here hove spikes poking out of them, so moke sure you slolom through corefilly.
You should now hove reached Shandar's fortress. In the first large room, stick to the edge of the room - ovoid the middle! At the South-East of the room collect the treasure.

In the North.West comer of the room there is a knight who you will hove to kill. Once defeated, leove by the door behind him. Wolk straight through the next room and leave by the North exit.
Look out for a small room to the West, enter it and activate the mechonism. Now roce bock to the end of the corridor. Your next encounter is with a Gorgon, she has a particular tolent for invert. ing people so kill her os quickly as possible. After you've defeated her, move into the room beyond and drink from the fountoin to restore life.
Heod South into a lobyrinth full of mummies and witches for you to kill. When you've dealt with them all, leove by the Southem
exit. Take the next passoge East and look for a smoll room to the West. Activate the mechonism you find there, then heod bock into the possage. At the end you will find some tion guards; kill them and use magic to heol any wounded charocters.
Examine the grille in front of you and trigger the tropdoor next to it. Walk through and heod North at the next crossroods. Wolk to the end, toke the treasure and octivate the mechonism. Return to the crossroods and heod down the South passoge.
At the end is a room with a magicion in it. For once in your blood-lusing life don't kill him; try the humble art of communicotion and listen to what he soys.
Go back to the corridor and toke the North possoge. You should come to a closed possage. Ploce the parrot in front of the large ear and le it talk - the possoge will open.
The next room hos low ceiling points, so slalom trrough with care. At the next room, work around the edges and keep oway from the centre.
You are about to engage in the final batle of the game, so get everyone up to full strength and prepore a Psychic shelter spell. Head into the Northem room and Shondor will oppear. All you hove to do now is kill him, then retreat from the fortress enioying the fireworks. Kendoria should now be able to look forword to a peoceful and prosperous existence.

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Amos
There's a mouse loose about Phil's bouse... This montb our Amos guru Phil South takes you tbrougb the intricacies of rodent control


## Publishing

This month Ben Pointer puts those sloddy disk labels to the sword with an guide to designing your own classy covering for a foppy

So, what are the limitations of ARexx's string handling routines? Well, for a start, they are a bit too fixed and rigid, a bit too literal, if you like. Essentially, ARexx offers three methods of parsing a text: It can detect individual words in a text, such as text separated by so-called "whitespace", which is computerese for blanks, new lines, tab stops and the like; it can search and find specified characters in a text; and it can find text in specific numerical such as the tenth character in a string. These methods can be used in combination, and with a bit of smart coding they can be very powerful.
The weaknesses start to show when you want to parse for a string that is not so rigidly defined; perhaps a string that is defined by alternative choices, or by what it does not contain, or even by the characters it contains, but not necessarily in the correct order.

## Searching

For instance, suppose you want to write a routine that searches a text either for the pattern "abc", or for the pattern "xyz". You will have to perform at least two separate operations (two checks) before you have your result.

There is no way in standard ARexx to formulate the idea: "search the text for either pattern ' $a$ ', or pattern 'b', and notify when you have found it", in one step.
The same applies in all the other examples above - whereas it is not too difficult to get the
crossword clues, database enquiry systems that can accept incomplete specifications, and, of course, the good old word processor spelling checker that gives you alternative suggetions.
There are also several programming languages especially languages that are intended for text processing that have a built-in ability to handle regular expressions, such as Perl and Awk. Anyone who has worked with these languages will miss their power and flexibility when having to use ARexx. The history of regular expressions is closely tied in with the development of software science, and there is a loe of literature on the subject - anyone who wants to find out more should consult a book on compiler fundamentals or lexical analysis.

Every computer programming hobbyist will gain from 2 study of regular expressions - but the good news is that you do not have to understand any of the theory in order to use the system effectively,

Well then, why not combine the best of both worlds? It would seem that ARexx and regular expression have a lot to offer each other. This idea prompted me to action. 1 knew that there were quite a few freely distributable function libraries to handle regular expressions, so I set out to see if I could adapt any of them to ARexx. desired result, quite a few steps are needed to get there! Searching the same piece of text several times over before you find what you want can be quite wasteful, and can make your programs slow.

With a bit of thought, you will realise that it should be possible to check through a given text only once, testing for all alternative patterns as you go along, much like a human reader would.
After all, if you want to find out whether a text contains any of the words "dog", "cat" or "mouse", you do not read it three times! What is needed is an appropriate notation that will allow us to specify the alternatives we are searching for, and an algorithm to perform the search efficiently.

In other words, we want a sort of super-flexible pattern matching notation that will also allow "wild" characters, negatives and alternatives.

A notation like this does exist, and it is known as "regular expressions". Regular expressions play a very important role in computing, and for good reason.

The notation of regular expressions is extremely powerful; for instance, it can be used to analyse any stream of characters in order to see if the words they form belong to a certain language or not - whether that language be English, Latin, Basic or ARexx.

This notation has now become more or less standardised (there are small variations), and is used whenever a computer language is designed or analysed.

However, despite their power, regular expressions are quite easy to use, and are useful for scores of other jobs too - some of them a lot more common than computer language design
Even the ordinary AmigaDOS file wildcards like? and \#? (where $p *$ ? info means any file starting with " $p$ " and ending with "info") are simply a very small subset of the regular expression concept.

Other examples include pattern matchers for finding

I didn't need to go far before I found that this had already been done! On Fred Fish disk number 444 I found Stephen Moehle's regexp.library, which has a ready-to-go ARexx interface.

This neat little library adds five new functions to the system, the two main ones being REIndex(string, pattern) and RESubstr(string,pattern). These do almost exactly the same job as ARexx's built-in Index(string,pattern) and Substr(string,position) functions, but instead of specifying a fixed pattern or a position, you specify a regular expression, as defined in the library's documentation.
As always, please remember that before you can use any external ARexx library you must first add it to the system, either by issuing the command rxlib xxx.library $0-300$ at the Shell, or by using the Addlibo function in the same way in your program. If ytou want the library to be available at all times you should add the "rxlib" line to your user-startup. To

## any character except newline

\$ the end of a line
whitespace
:a any alphabetic character
:d any digit
[...] any of the characters ... in the brackets
[^...] any of the characters ... not in the brackets
one or more occurrences
zero or more occurrences
takes the next character literally
(used for symbols)
give you a quick taste of what this is like, we will look at some examples. Diagram I gives a brief summary of the main elements of regular expressions. Note that it is by no means a complete list! In the examples that follow I have tried to strike a balance between simplifying the ideas as much as possible so that they are readily understandable to newcomers, and not to be too repetitive.
There is an important advantage when using regular expressions to parse a string of characters. The standard ARexx technique of parsing a string with patterns, returns the first string that matches the pattern.

## Loopholes

However, there might have been a more general instance that also matched the pattern, in which case it would have been truncated and lost. For instance, suppose we are searching a text for words beginning with the letters "pr" and ending with "es", using some code like:

```
paRsE var text bitbefore 'pr' xix 'es' bitafter
vord = 'pr' | xxx || 'es'
```

If the word "processes" was encountered, the resulting word would be "proces", as the last "ses" would be cut off and lost.

Using regular expressions along with ARexx gives us a neater way to do the job, and the resulting code is much faster.

```
pattern = ' [Pp]r[^: ]*es[1.,!: ]+'
DO FOREYER UNTIL text =
vord = IESubstr(t'+ | | text), pat-
tern)
PRRSE VAR text bef (vord) text
ENO
```

The regular expression pattern above is explained in Diagram II. Other than that little explanation is needed. A blank is added in front of the string each time - this is necessary because any trailing whitespace or punctuation is removed by the last [ $1.4:$ ] + pattern.
It also takes into account the case of the first word in the text. Note that the word will still have to be stripped of the


# string handling 

There is also the problem of ensuring that only single words are checked (avoiding multiple word combinations, where one word starts with a "pr" and a subsequent one ends with "es", such as "prime fees").

We could specify blank spaces in the parse string (before the " $p$ " and after the " $s$ "), and this would work fairly well, except it would still not take account of punctuation marks, tabs, newlines and so on.

In fact, the "formal" way to do this under ARexx would be to parse the text word by word, strip any extraneous characters and check whether each word meets our requirements. The code for this would be a few lines longer, and it would run a much slower, but it would work correctly. Notice that if we had to allow for capitals, we would need an extra check.

```
DO FOREVER UNTIL text =
parse var text candidate text
candidate = strip(candidate,'!,.')
** the next two lines cheek our conditions */
If Pos('pr',candidate)=1 AvP LastPos('es',candidate)=?
THEN vord = candidate
END
```



## First character is a blank

[Pp] Second character is " P " (upper or lower)
$r$ Third character is " $r$ "

| $[\Lambda:]^{3}$ | Any number of characters but no whitespace |
| :--- | :--- |
| es | followed by lowercase "es" |
| $[\Lambda,,!]+$ | A full stop, comma, exclamation or <br> whitespace (one or more) |

Diagram It: Regular expressions are easy to
understand if you break them down!

## punctuation marks.

Another useful example is the parsing of a full pathname in order to extract the actual file name. Suppose you have a pathname such as "DH0:subdir1/subdir2/dir/myfile". In the past we have dealt with this situation in two ways. The more common alternative is to find the position of the last slash, and then parse by position to get the file name.

```
A = lastpos
PARSE VAR pathnane un filename
```

The other alternative is to parse the name recursively using the pattern "/" until you get to the last one. This is more involved, but can be useful if you also want to know how many levels down you are.
The regular expression that deals with this problem is simply $\because$ *

```
location = RESubstr(pathname,'*/')
    PARSE YAR pathoase (location) filenase
```

Obviously this example is trivial, but it illustrates the point very clearly. Regular expressions will return the longest possible string that matches the pattern, and not the first occurrence.

I am sure that if you do any sort of utility programming, you will find regexp.library a very welcome addition to your libs: drawer. I must point out that this implementation is still a bit weak, mainly because it does not allow for bracketing and repeated patterns.

I hope the situation will be remedied soon. After all the code is freely available - all that is needed is to convert it into an ARexx library.

> One of the main strengths of ARexx is the ease and elegance with which it handles strings of characters. But even here there is room for a lot of improvement, as Alex Gian reveals

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$T$he cast and crew have been chosen. You've given the script to the actors and the storyboards to the camera operator. In bed at night, you lie awake tossing and turning, juggling queries and doubts about the video that want to be answered.

Where should I place the mike for optimum sound quality in a four-way, one shot conversation? Am I good enough to direct a team of 20 people? It's four o'clock in the morning and I still have a day job to get up for. The answer to any worries is to keep organising. Next up on the list of priorities is to call a production meeting. This involves the crew but not the actors. At the moment, props and set dressing lists, scheduling and location hunting involving a recce are probably your main concerns. Remember to delegate - don't try to do everything yourself, your crew is there to help.

With amateur videomaking, relying on people's goodwill is very important. Laying your hands on props and items for the locations can be difficult but you'll be surprised at how interested and generous people can be when asked for a favour concerning a film.

Start with either a letter or phone call to the shop or owners of a particular location or prop you want to use and explain your situation and needs in straightforward terms emphasising that the video is non-profit making but you intend to enter the film into international competitions.

Offer them a chance to see the final result and ask if they would like a credit in the end titles for their troubles. Also promise to send the exact times and dates of when and where you want to shoot in writing.
When permission is gained, make sure it is given in writing (people can "forget" especially if shooting in a pub, club or shops) then the next step is the location hunt or recce.
This is used by the director, camera operator and PA to take a look round various possible settings for the video.

## EXPERIMENT

Try to take a camera or camcorder with you to get some shots of the location to take back and study in more detail. While there, discuss with the camera operator what ideas you have for the shooting of the scene. Storyboards can be altered or completely changed so don't be afraid to experiment.

Give him or her space to express their ideas as well which, like the story creation stage, can help to trigger more ideas and form a better working relationship - show people at this early stage that you trust and respect them and their own opinions.
If you do, they'll enjoy working for you and that means they'll work harder, producing better results over the rest of the shoot.

Check out how practical it will be to set up lights, tripods, sound equipment and so on. Count the amount of power points there are in the place - you may need extension leads and four-way adaptors.
Another important point often overlooked by amateur crews until it's too late and the entire buildings fuse box is blown, is to remember to calculate the amount of electricity being used by all the equipment - lights in particular can have a nasty habit of overloading and shorting the system.
Above all, be practical first and creative second. Assess what is available to you and work from there. If the ground-

## Calling all the heroes

Once everybody has agreed to the schedule, the next stage is to create call sheets. These document the exact times, locations and people that will be needed on each day.

Distribute them to everyone involved either at the beginning of the shoot or, more practically, the evening before each shooting day so that the information or any changes are up-todate and accurate.

work is done then the inspiration will grow from it.

On successfully attaining the basic tools for the film, the next and probably most difficult stage especially with an inexperienced PA, is to sit down and sort out the scheduling for the entire shoot.

## PLANNING

If this is your first time then it is still important to have a tight if lenient time structure. Firstly, it will make yourself and the crew more motivated and focused.
Secondly, if you turn up at a location and the owner see a slack and decidedly denergised mass of disorganised people then they may well change their minds and kick you out of the building. You may be an amateur videomaker but act in a professional manner.


It is very unlikely and often impractical

## to shoot a script in order. Time, access and <br> Managing

## your time

the hassle of shifting gear back and forth to certain locations are usually the main reasons for shooting out of order.

Break the script down into each scene and work out through the storyboard and shooting script (a list of all shots used in the video where each is numbered) and estimate as accurately as you can with the PA how long each one will take to film.

If the shots in a particular scene are relatively difficult to achieve, such as a moving shot with the camera operator using a wheel chair, try and take any difficulties into account.

Once decided, take a lump of time needed to shoot the entire scene and organise it into the overall shooting day. Do this with all the scenes and arrange them into schedule with dates and times. Try and give yourself emergency space in case of going over schedule.

When completed, call a meeting for both crew and cast to check that there will be no problems with dates clashing and to inform everyone of exactly what is going on to avoid confusion later.

If it all seems like a huge and monstrous amount to think about, remember to take everything one step at a time and you'll find that all the pieces of the jigsaw will slot into place.

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Whether you're a dedicated muso or just an interested bystander with a shiny new machine, getting into Amiga music can be much cheaper and simpler than you might imagine.
To start we'll look at the market from the bystander's position, highlighting the cheap and cheerful products which for as little as $\$ 2$ will allow any beginner to create music on a par with that found on commercial games software.
As you've probably guessed we're talking PD and more precisely MED - a program that's been the premier PD soundtracker clone for longer than most Amiga musos would care to remember.
Due to the prolific success and countless updates - courtesy of its creator Teigo Kinnunen - the PD libraries are literally fit to burst with countless revisions of the aforesaid MED.
However, if you're after the very latest offering - alias OctaMed v5 - Seasoft Computing is the first place to look, primarily because they have managed to obtain exclusive rights to distribute the eighttrack licenceware version which comes in at a full package price of around $\$ 30$. For more information contact Seasoft Computing on 0903850378.

Although eight channels may sound more attractive than the four track shareware altemative, the additional tracks do not play samples but merely sequence Commodore 64 style synth sounds.
For the beginner these additional tracks aren't essential, and as a result, the four-track PD program is perhaps the ideal choice for testing the water prior to the larger investment in the licenceware
$\square$
alternative. Almost all the major libraries carry the four track version for around $\$ 2$. When ordering be sure the software on offer is at or around v3.20.
Like all the soundtracker clones, MED employs standard 8 -bit samples as its primary sound source. These can be either created yourself or alternatively there's a wide selection of pre-recorded effects and instruments that can be bought direct either on disk or CD from PD libraries or dedicated sample suppliers.
If you're happier with pre-recorded sounds, quality commercial sources include the Zero-G Datafile which carries both CD and disk-based collections, and is available direct from Time and Space at PO Box 306 , Herts HP4 3EP. Tel: 0442870681.

Although excellent quality the vast majority of the Zero-G samples are heavily danceoriented with assorted scratches and popular hook lines. For any would-bé DJs or rave


# Sound advice 

## The ultimate band

If you're still undecided as to the filling for your postChristmas musical stocking, Blue Ribbon can supply an intermediate package which allows the user to employ their own or pre-recorded samples as part of an automated sixpart accompaniment.

The software, entitled SuperJam1.1, allows you to begin building a bridge between the internal sounds of the machine and the world of Midi.

It works by allowing you to assign any one of numerous styles which then form the framework within which your five automated musicians will literally jam along.

All you need do is add the basic melody and play your part as the lead soloist. No matter what chord progression you add the other members will automatically play a suitable accompaniment.

## PURPLE POP

For example, if you specify a rock-style with a chord progression of say $E$ minor, $G$ and $A$, your automated bass player is almost 'certain to rip straight into Smoke on the Water!

OK, nobody said the package is perfect but with a bit of practice you can generate perfectly acceptable lift music easily, which can then be worked into a pseudo-original or perhaps employed directly as backing music on various multimedia exploits.

Besides the fun and functionality of the package, the beauty is that SuperJam1.1 is equally at home with Midi information as it is with converted Amiga samples. If you're looking for an affordable and interesting introduction to composition plus both an educational and speedy production tool, SuperJam1.1 is ideal.
fans the collection is ideal; however if you're planning to build original tracks from the ground up, the next collection is probably a more attractive proposition.

If you fancy an alternative to rave tunes, the Sample Series from those loveable Mancunians at Software Technology could have an ideal altemative. Unlike the Zero-G collection the Sampler Series is comprised entirely of sounds borrowed from the latest synths. If you're interested in a more purist's approach to audio plagiarism, you can get the aforesaid collection from: Software Technology, I-Mex House, 40 Princess Street, Manchester M1 6DE, Tel: 061-236 2515/4.

## Easy Midi

If you're looking to side-step the internal talents of the Amiga altogether, there are a whole selection of budget conscious sequencers walting in the wings.

Although all of the programs listed are primarily aimed at Midi, they also all fully support the machine's internal talents with equal enthuslasm.

Although not a particularly strong selling point in the eyes of serious users, it does mean that if Midi music is your goal but finances mean a walt for the necessany hardware you can still come to terms with the software thanks to inexpensive Amiga samples.

Ideal choices for any potential investor include Sequencer One Plus, MusicX, B\&PPro2 and TigerCub, the first of which is perhaps the ideal choice boasting an extremely user-friendly editing system and intittive desten.

On the downside, Sequencer One Plus isn't the cheapest, as the now rather elderly

> Paul Austin points out the best selection of software for the musical beginner
but still usable MusicX easily lays claim to that particular title. Music X was, in its day, easily the hottest item on the Amiga music scene, and it still remains a viable option especially if youre prepared to shop around - although it has been superseded by the others when it comes to case of use and added features.

The final option is to throw caution to the wind and invest in Bars \& Pipes Protessional 12 - which although far from cheap offers a degree of expandability only equalied by KCS 3.6.

The reason for the B\&PPro2 bias as opposed to KCS is simply that although the two are on a par for power, B\&PPro2 is much easier to master for the outright beginner.
If you think that in time you may be in the market for a real power package, it could be vorth tracking down a copy of TigerCub. This Is basically a very cut-down version of the bigger KCS sequence. However it does proide a great opportunity to familiarise yourFell with the KCS environment prior to taking fhe plunge into KCS 3.5.


First this month a look at some of the boards I've been visiting recently on my travels around the globe via modem. I used to have a phone book on my comms program which stretched from the top to the bottom of the screen, exotic numbers from far flung places.

Then I settled down, like you do if you're a comms head, into visiting only the boards I used regularly. I visit CIX and The Direct Connection, I popped into other sites via Internet, but that has been it. But then I remembered what all those other names on my phone menu were for.

A quick dial-up produced a depressing result. It must be only the best part of six months since I was on all of these boards and almost all of them have vanished, or at least are not on-line most of the time.

Of the ones which were still operating I have chosen a couple which I particularly liked this time around, and they are Cheam Amiga and Essex Amiga.

## Cheam Amiga

Although not very strong in the graphics department, this is a good solid board with lots to recommend it to the casual network surfer. The file area is particularly good, and if you're local to Cheam then this is one of the fastest and cheapest ways of getting your Fish Disks or the more recent demos.

Some file areas and message bases are better supported than others. I don't know what kind of system the board is run on, but it may not be very large. But, the board is well organised, and has a number of feeds from outside to liven things up a bit.

There's a lot of new games and demos, which seem to be a popular hangout for uploaders as well as downloaders. Some people seem to not care which area they upload to either, so keen are


A good solid board, but not many graphics

## Internet corner

Here's a nice, out of the way place you can visit on the Internet in an idle moment:

> ftp.eff.org

Home of the Electronic Frontier Foundation, or EFF, who are a group of very high ranking old computer heads like Steve Wozniak who invented the Apple ll, John Barlow, Mitch Kapor and many others.

They champion the rights of all computer people to inhabit the electronic frontier, and vigorously oppose any wrongtul arrests, the Steve Jackson Games for example.

The FTP public folder is full of very interesting stuff, like electronic magazines and archives of very hard to obtain facts and figures, plus articles and whole books about famous coders, hackers, court cases and so on.
A one-stop resource for the person who's writing a book about computer crime or hacking in the old sense of the word.

they to get on-line... As well as a healthy sprinkling of BBS software there's also a special area for Jolyon Ralph. Hmm, why does Jolyon need his own file area?
Still, what with the text files, fonts and CanDo support, this is a healthy board with a lot going for it. All it needs' is a graphics overhaul and a bit more attention paid to updating the file areas from time to time and it'll be a great little board. Nice one.

## Essex Amiga

Next is the Essex Amiga board, which has better graphics and a lot more going on, although better is a relative term. There is more of everything although as ever I'm not sure if this is necessarily a good thing. I got lost and spoilt for choice on more than one occasion. But having said all that it's a neat and tidy board with lots to look at and bags of stuff to download.


# A brand new friend 

The incentive to upload as well as trough your way through the piles of files is that you have to keep up a respectable upload/download ratio, and the more you take the more you have to give. This is a good way of doing it, and it obviously pays off given the size of the file areas.

As well as all the usual graphics, demos and games, there's also an Imagine support filebase, plus a load of Fidonet software and the UK BBS Newsletter. One of the most popular areas is the Transamiga filebase, as this is the official Transamiga support BBS. It's run on the program and it tells other people how to run it too!
This is a nice, easy to use, good looking and full BBS with loads to read and lots to download. The electronic equivalent of a well run public house.


Essex Amiga can spoil you for choice

Phil South looks at a couple of Amiga-based bulletin boards

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0ne of the hardest things to get to grips with in Amos is the difference between hardware and screen coordinates. This still causes me no end of trouble, and for beginners it must be sheer hair-shirt and back-whipping purgatory.
So in a fit of pique I wrote this program to show up mouse coordinates. Load an IFF picture, preferably the one you want to locate the mouse over, and then just read the figures (and write them down) as you move the mouse over the screen.

```
Rer * Wouse Co-ords Toy.Anos *
Ren
Curs Qff : Paper 0:Cls O
Curs Off
Screen Open 0,640,512,16,Hires
```

So, we start by adding the usual. I've opened a screen here which is hi-res, but you can use the size of screen that your IFF screen is set to. Don't use:

LORD IFF *", 0
as this will cause problems with Limit Mouse. Next load a picture into your screen:

## Load Iff "iff_picture.iff",

The reason you might want to do this is that perhaps on the screen you have an object and you want to accurately check out where it is so you can match that to a limit mouse or Set Zone command.

The next bit sets out and prints out the title and the co-ordinates, or at least where they will go:

```
Locate 0,0
Print "Mouse C0-0rds Tool v1.2
wos+0 0,1, Print "Y= " : Print ay=
locate 0,20 : Print "cTRL-C to stop"
```

So that's how our screen will look.
Now we're into the loop. This is where all the work gets done. First, notice how the variables Y 1 and X 1 are used. They are loaded with the location of the mouse in the X and Y co-ordinates.

These are of course hardware co-ordinates so we have to convert them to screen co-ordinates. This is done by loading Y2 and X 2 with the product of the conversion using X and Y Screen.


And finally, the current screen locations are printed out on the screen at the same spot. Each time the numbers are printed a few trailing spaces are printed too, so that the numbers don't leave behind any confusing extra numbers as they increase and decrease in size (see what happens if you leave out the trailing spaces!).

So the thing to bear in mind with object control is the difference between hardware co-ordinates and screen co-ordinates. The X MOUSE and Y MOUSE commands return a hardware co-

## Write a program!

Co-ordinates are a right nuisance and no mistake. This month's homework is to create a program which allows you to store screen co-ordinates as mouse co-ordinates and vice versa.

Or how about a program to design new mouse pointers? You will need to know all about mouse co-ordinates and also be able to store the new desions as mouse.abk. Send in your best efforts and we'll print them in a future issue.

AIMOS
ordinate so you have to convert that to a screen one for the position to be right.

It's the same with LIMIT MOUSE. In order for the co-ordinates from X and Y MOUSE to be correct you have to convert them using X and Y SCREEN respectively
The old Limit Mouse problem is a knotty one. If you create a screen by default by loading in an IFF file, then the screen seems to go all sorts of odd sizes, at least as far as the mouse is concerned. Omit the Screen Open command and see what happens.

This is something which makes you come a-cropper a lot in Amos: Not open screens before you load something into them. It's a lazy programming habit to get into and causes all manner of problems when you want to go back to a bit of code and compile it. So always set up your screens precisely before you do anything with them, and you'll save a lot of grief later on.


## I saw a

 mouse...

Where? There on the stair. Phil South looks at Amos mouse co-ordinates

If you have an Amos question, then please write to Phil South, Amos Column. Amiga Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

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But like any new project, you have to approach the creation of labels with a clear idea as to the steps involved, and in what order to do things. No good creating the labels before you have the type you intend using in your hand.
You could work with a known standard, but you can be sure that your supplier will throw a spanner in the works and present you with a sheet of labels that is another standard, different to that of your artwork.

When I rang various suppliers and copy shops I was presented with a few different sizes, in the end settling on the most common size of 68 mm by 68 mm , giving 12 labels per sheet.
But don't use that as the basis for your layout because you will also need to know exactly where on the sheet the labels sit before you can design your grid.
Once you've got a sheet of labels in front of you, the design process can begin, with the most important part being the setting up of a grid. Get that wrong and you'll waste a lot of time later. A point to watch out for is the positioning of the labels on the backing paper.
Some sit butt to butt, while on other sheets they sit apart from each other. Check, and measure your sheet of labels carefully before designing the grid.
Once the grid is done you can turn your attention to the content of each label. This will depend on the purpose of the disk, but I find the minimalist approach is best. Less is more. Too much information in such a small space can be difficult to read at a glance.

Sketch out on paper the type of information you want on the label and give each piece of information a rating. You can now design each element of the label in relation to its importance. And don't forget about the part of the label that folds over the top of a disk.

It's also a good idea to leave a margin of 3 mm or 4 mm within the label itself in case the sheet of labels is not properly aligned when it goes through the printer.

When laying out your labels it will save time if you first create the one label which contains elements common to all your labels, and then duplicate it until the page is filled with the correct number of labels. You can then add any other elements that differ from label to label.

Once you have all your labels on the page it might be wise to do a test print to make sure they are in the right position, comparing closely your artwork with a sheet of labels.

You can then proof read each different label. The reason for the care is that sheets of labels cost a pretty penny. A pack of


Think very carefully about which is the most important element on your label, and size it appropriately so that it is visible at a glance

## PUBLISHING

100 quality labels will cost around $£ 25$, although there are cheaper brands.
After the checking process you'll be ready to print the labels, or the artwork to be used for the labels, the difference being that if you own a laser printer you can print your labels direct from your publishing program, if not you will have to produce artwork which a copy shop can use to print or photocopy on to your labels.

Another option, the one I prefer, is to find a bureau or copy shop which has a 600 dpi laser printer that can print from PostScript files.

This enables you to cut out having to print the artwork, and because the printing process is coming direct from your PostScript file, the quality will be better than when reproducing from a hard copy of your artwork.

As to the cost of the printing, I found


# Sticky business 

that when you supply the labels, copies are costed at normal photocopying prices. Multiple copies from the one piece of artwork are cheaper than if each sheet of labels has to be copied from a different piece of artwork.

If all your labels are the same, and you want better quality than a copier can produce, it may be worth having them reproduced on a printing press.

Many copy shops are willing to take artwork in PostScript form and reproduce them for around $\$ 30$, plus the cost of the media (the blank labels). For a little more money you can change the black ink for a colour. If you feel very rich you can have two spot colours, red and blue for example.

To produce 1,200 labels you will be looking at $\$ 25$ for the media and between $£ 10$ (photocopying) and $\$ 80$ (spot colour) to have the design printed on to the labels.

In PageStream you can group all the objects within a label so that they appear as one object. This can then be duplicated easily to create a sheet of them


> Ordinary disk labels aren't good enough for Ben Pointer, so he shows you how he designs his own

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This is just a smal selection of the tools and utilities on offer. Others include ScreenX and GrxMem.

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## 

Oh in e Window.o. 176 Simple video editing with EditMate, Noddy's Big Adventure and Vidi Amiga 12 (RT) under test
Software spotightool 81
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Easy and affordable video editing system Supplier: Meridian Distribution
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AIthough the Amiga has been synonymous with video production since its inception, the editing of live footage has always been a grey area best left to the experts.
To be fair the problem wasn't caused by the Amiga but rather the myriad of proprietary timecodes, connections and control protocols which have made an automated editing process difficult at best.

As a result Amiga-based video editing systems have largely remained the domain of pro and semi-pro videographers who can both afford and apply the power features which such systems provide.

In addition to the cost and complexity of the hardware and associated software most of the serious editors demand at least some form of modification to one or more of your VCRs - if you won't to avoid losing a generation when adding timecode to your original recordings.

Fortunately with the arrival of Edit-Mate such problems can now be avoided. No timecode is required and better still there's no need for modifications to your existing equipment.

However as you've probably guessed much of the power offered by products such as Videopilot has been inevitably sacrificed - but with a saving of approximately $f 1,200$ it's a price many home users will be more than willing to make.

Although simpler than most systems, Edit-Mate isn't without the usual array of cables and connections, along with a single programmable infra red. Of course CamLink - the creators of Edit-Mate - will be more than happy to supply additional cables as required.

## CONNECTIONS

In order to connect to the Amiga a special parallel port D. ring plugs into the rear of the machine enabling the edit control cables to link the Amiga with the play and record VCRs.

Like the majority of basic edit systems the video signal is passed directly between the two VCRs/camcorders, and as a consequence Edit-Mate is left free to control the transport of the two machines.

As mentioned above the number and variety of video control protocols is quite literally vast and because of this EditMate concentrates its efforts on Panasonic and to a lesser extent Sony.

In the case of Panasonic you're provided with a five-pin DIN while the Sony offering takes the form of lanc cable with a 3.5 mm jack. Of course if your VCR isn't either of the above you can always fall back on the aforementioned infra red. Please bear in mind both players need some form of remote control so ensure you order enough cables...

Thankfully audio also has its place in the Cam-Link system courtesy of a small mixer which comes as part of the EditMate package. Although a creation of there own making it must be said the mixer is more than a little reminiscent of Tandy's legendary four channel microphone mixer.

However considering the Tandy version retails at around $£ 25$ while the Cam-Link comes in at $£ 200$ with a few VCR

# Minvinimu 


cables, a D-ring parallel connector, a mic and some software, it does seem Edit-Mate is a tad more expensive than it should be.

As for build quality there's little to complain about - as long as you don't have an aversion to moulded plastic. Along the rear of the unit awaits the usual array of phono/RCA inputs which can take a stereo signal from the source VCR, a CD player or tape deck.

On the other side of the coin output is handled by two more phonos destined to transport your original audio, backing music and voice-over to the target recorder.

On the top of the unit sits the essential master volume plus the three faders to control the internal mix between the elements. Other than that there's the ubiquitous on/off along with a toggle switch to alternate between the CD or tape player. The only other I/O options sit on the front of the
mixer in the form of twin quarter inch jacks for the headphones plus a single stereo quarter inch jack for headphones. In short, it looks simple and indeed that's exactly how it operates, just switch it on and you're off.

In keeping with the tradition of simplicity the software is blissfully simple thanks to a very straightforward point and click interface which even makes VCR selection a doddle.

Like any self-respecting package hard disk installation is catered for via the usual icon-driven script. In fact icons play a big part in the Edit-Mate set-up procedure with individuals offering access to the main program, hard disk install, infra red programming and finally burned-in on-screen timecode.

This final option shouldn't be confused with timecoding the tape itself. In this case timecode simply refers to the ability to generate an on-screen timecode read-out which can be burnt onto the output with the assistance of a genlock. Although a
seemingly strange option for home users it's been added to allow semi-pro videographers to add timecode to rough creations which can then be sent to the client for evaluation.

The idea is that the client can then make a note of the scenes and their locations, these can then be relayed back allowing you to make the necessary adjustments to your edit script prior to compiling a finished master.

Assuming VCR selection, infra red programming and cabling is complete it's time to enter the software itself and begin to build your masterpiece. At the risk of repetition life just keeps getting easier.

After rewinding both recorders and resetting the counters for each selection can begin. Of course, now thanks to the program's remote control for each player, the buttons need never again be touched by human hands.

In order to add scenes to your masterpiece you simply click on Edit-in and Edit-out in succession. This process is then repeated throughout the tape until all your favourite scenes are selected - paused can be used for greater accuracy - rather than constantly selecting shots on the fly.

Once all your scenes have been captured you can begin fine tuning. All edit points are kept in memory and are displayed in a list showing their in/out times and scene duration plus the total elapsed time for the entire production.

At this stage you're free to cut, paste copy and duplicate to your heart's desire - and to make things even easier you can also add comments to the various scenes. The numerical parameters for each scene can also be adjusted by simply highlighting the appropriate line and typing in the new figures at the desired location.

## POINT-AND-CLICK

If you're happy with your edit decisions or simply wish to save out in case of disaster, committing your creation to disk is another point-and-click procedure - and of course, loading up an existing file follows the same format.

Any pre-roll problems that may arise can also be solved by the delay option which allows for the idiosyncrasies of your particular VCRs transport to be compensated for thereby making edits as accurate as possible.

Assuming all the editing is complete, the only thing left is to click on the perform edit button, follow the prompts and sit back as Edit-Mate puts your masterpiece together.

As you've probably noticed, Edit-Mate is a blissfully simple system that's ideal for the home user who simple wants to condense hours of Camcorder footage into a concise and potentially stylish production complete with sound and vision.

However, Edit-Mate does have one drawback, namely its cost. Although cheap in comparison with other pro systems, $£ 200$ is still a bit pricey. If Cam-Link were to release a cut-down version at a better price minus the mixer and mic it would be a sure fire success.

As it stands, the system still remains very attractive in relation to the opposition, with the only challenge coming from similar tape counter edit systems from the various VCR manufacturers. For home users it's a friendly if perhaps a little basic answer while professionals could find it invaluable for rough edits and general pre-production.

## Noddy's Big Adventure

Educational Software package for 3-7 year olds Supplier: The Jumping Bean Company Phone: 0602792838

Price: $£ 24.99$
Noddy's Big Adventure is the sequel to Noddy's Playtime. It is an interactive educational and creativity package designed for three to seven-year-olds.

A large range of subject areas are covered within the game, some covering early aspects of the National Curriculum, and incorporates different levels of difficulty so all levels of intelligence are catered for.

Every aspect of this package has been carefully designed with children in mind. The controls have been made as simple as possible, even the numbers on the disk have been enlarged to make disk accessing easy for young children.

However, with all the interlinking screens and levels it might prove to be a bit taxing and frustrating for younger children to find the particular activity they want.

The graphics are bright and colourful and remain true to the original Noddy storybook illustrations. This, along with the realistic sound effects, is guaranteed to keep children amused.

Each of the different programs have a fully interactive scene at the beginning and if a certain object is clicked on it will either animate or make a sound which is likely to appeal to a child.

The game is cleverly interlinked by a map which Noddy can drive round to each level and can be controlled by the child which forms a driving game in itself. They may end up enjoying this section more than the actual learning activities which would defeat the whole object of a learning package!

The separate word processing section of the package at first seems to be an excellent idea. A child can acquaint itself with the basic functions of a


[^9]
"grown up" word processor while increasing its vocabulary through the various word games and stories. However, the range of icons to choose from is a little confusing for a child and their concentration may easily wander.

There are a wide variety of activities included which range from Tricky Trees, a memory game where children must repeat sequences of notes, to Beach Sorter, where the aim of the activity is to place objects or animals into groups.

These are varied enough to keep a child's interest for quite a while but some levels may need lengthy explanations from a parent.

How much of a learning aid Noddy's Big Adventure actually will be is questionable. Although many parts of a child's early education are covered in this package, the way in which a child finds out whether they have successfully answered an activity is unhelpful.

Instead of pointing out why the child has got an activity wrong it, will simply say "No, listen carefully" for example, which may be quite disconcerting to a younger child. They may also become distracted by the not so educational features such as the driving game and the interactive screens.

Parental assistance may also be required for younger children to explain why they may be getting something wrong and to help them find the activity they want.

It's worth noting that Noddy's Big Adventure does require a minimum of 1 Mb to run (2Mb if run from hard disk).

## 12-bit real time video digitiser with

 editing software Supplier: Rombo Phone: 0506414631 Price: $£ 199$
## Vidi Amiga 12 (RT)

The latest digitiser in the Vidi Amiga family offers a built-in VRAM buffer for real-time image capture in full 12 -bit or 24 -bit with additional VRAM modules at interlaced resolutions of up to $720 \times 576$. It is a solid development of the popular Vidi Amiga I2 AGA model we reviewed earlier this year.
As with other Rombo equipment, the 12(RT) hardware is crammed into a small plastic casing and attaches to the Amiga's paraliel port. Two composite video inputs and a single five-pin mini-DIN Y/C socket on the rear of the unit give the user software control over the video source used, and there's an optional power supply.

Vidi Amiga requires 500 mA from a 9 V DC supply, but this information is only to be found on a slip of addenda put in the box with the manual. Users must supply their own PSU and ensure that it is of the correct type, and if they use the information properly there should be no problems.

It would have been better if Rombo had at least indicated the required polarity on the casing of the unit, as plugging in the wrong polarity PSU can destroy a piece of equipment, but most battery-eliminator PSUs will work so there should be few problems for new users.

Once the hardware was connected using a small extender cable to attach the unit to the office A4000, software installation was easy, although the installation program still insists on using the SYS partition. On booting the main program, everything is at once familiar as this is basically the same software supplied with Vidi Amiga AGA.

Split into four main sections, it offers video grabbing, mixing, editing, and a carousel animation feature, all of which combine well and add to the package's usability. The raison detre for this package is grabbing, so it is as well that the grabbing section comes up to standard.

A preferences screen allows for full control of the grabbed image, including saturation, brightness, contrast, and file format. The only limitations are those imposed by the machine and which version of Vidi Amiga (RT) used. Non-AGA Amigas can display a basic 16 -colour preview of the image stored in Vidi's VRAM, but AI 200 and A4000 users can take advantage of the excellent 256 -colour screen.

When grabbing, the user can switch between the three


Set the best display mode for your Amiga

video sources by clicking a selection of radio buttons, and the controls for brightness and so on are duplicated. There is also a slider to enable a delay to be set and the number of frames grabbed in a sequence can be altered to suit the user's RAM or hard drive space.

Grabbing itself takes place instantaneously and the incoming video signal is stored in the on-board buffer. This is a 384 k buffer in the case of Vidi Amiga I2(RT) and makes possible the grabbing of true 12 -bit images in lo-res interlace full overscan ( $360 \times 576$ ), but the 24 -bit version has a full IMb allowing 24 -bit images at $720 \times 576$.

Users of the 12 -bit version can upgrade their hardware for an additional $£ 99$, but the 12 -bit grabs are so good that many will not feel the need. Clear and sharp with little or no movement blur, Vidi Amiga I2(RT)'s performance is a definite improvement over earlier models.

## QUALITY

When the full 24 -bit unit is used, the picture quality of the finished grabs is as good as any other unit on the market and the only feature now separating Vidi Amiga from V-Lab is the latter's infra red-controlled automatic grabbing software for capturing complete sequences of video.

For static grabs, Vidi's quality cannot be questioned, and as there are 24 image processing functions built in to the edit section, there are as many ways to save a grab as one could wish.

All grabs taken directly from video are stored as RGB data and the image processing features can be applied immediately. However, images imported from other sources or already saved out are also catered for because the edit section also has a Get RGB command to analyse any image and break it down to its three component colours. Images can be given the negative
treatment (useful if you want to scan a colour negative and output the processed print), embossed, quantised, pixelised, sharpened, blurred, and just about anything else you fancy, but Rombo have dropped the Psychedelic filter (boo!) so beloved of rave fans will have to look elsewhere for comfortingly chaotic graphics..

In all, this is a very impressive piece of equipment which works well, offers a fair degree of flexibility, and fails point blank to crash or cause unnecessary problems.

As an evolutionary step it would have been a good enough development of the Vidi range, but on its own as a product to compete with V-Lab, Frame Machine and others, it is a strong contender with a good right hook and a neat line in combination punches.


Do strange things to Sean Connery. Er...
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# Solivali spotight 

# With so much attention being lavished on Lightwave, Paul Austin redresses the balance with a round-up of the opposition 


#### Abstract

column the aim is to side step the technicalities and concentrate on practical application hopefully targeting the perfect solution to your particular videographic problem.

How betore hundreds of Irate punters put pen to paper extolling the virtues of the old


#### Abstract

guard - Videoscape, Sculpt and others of that ilk - it must be stressed that the aim here is to highlight the best choices for those who ve evolved from such software and are planning to compete with the latest 3D creations within corporate and troadcast productions.


## Real3D Classic

Formerly known as Real 10 Tutes, RealiD Classic was the main contender againt ter atriugte of Imagine. Being a convert from Real3D ta k (an lan lee the relative benefits of both systems.

Although both are eronachartists with equal relish, I'd say mat imuner mald be more to the taste of the purist whe marto beimablity and doesn't mind investing time and efortmpric, whie Real Classic provides an easier mertas andang wigh quality corporate logo materal $-\overline{2}+2$ aph excelient, can lack the subtlety of a simarime
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 the rather idiosyncticic Cons
 means basic and when that $\quad$ monst aliasing on the marier man applications is pretty hant bun

## Caligari 24

[^10]up to the others, but to be fair that isn't what Caligari is intended for. In short, Caligari is the ultimate corporate anim generator. Thanks to the program's relatively basic rendering and mapping options it will never match up when it comes to clever images.
However that's probably a fair price to pay for one of the best modelling and animation environments on the market. If you're purely interesting in graphics that will animate beautifully but always look computer-generated, Caligari is the perfect combination of ease of use and power animation - and all at a unbelievably cheap $£ 99.95$.

## Imagine2

To be honest I must admit to being slightly biased towards Imagine courtesy of prolonged use. However being aware of the problem is half the battle. As a result I'll endeavour to curve my enthusiasm and maintain AC's usual high journalistic standards.

Although admittedly my favourite package, it must be said Imagine isn't without its faults, most obvious of which is the program's relatively poor anti-aliasing.

In addition, its accompanying manual is disappointing to say the least - pottering along in a narrative rather than informative style that makes comprehension of this complex and somewhat idiosyncratic package even mpre daunting than it need be.

Still, even with these drawbacks the program nevertheless offers a degree of modelling and mapping freedom that can only be matched by Real3D v2 - a program which is at least three times as expensive and arguably even more dificult to master. Another minus in the Imagine column is the program's approach to animation. Although reasonable, it's by no means as intuitive as programs such as

Caligari which use real-time hierarchtical animation with on-screen paths and graphical motion paths.

In its favour, Imagine boasts ever-increasing third-party support which includes the excellent Understanding Imagine reference manual, which for around $£ 20$ will solve the aforementioned manual problem instantly.

In a nutshell, Imagine is best described as the ultimate enthusiasts' package, capable of startling photo-realistic imitation of either the real or virtual world. However be warned, there's a step learning curve which demands dedication but can return award-winning results.

## Aladdin 4D

Although very respectable as an all-rounder it must be said that Aladdin doesn't really justify its rather inflated asking price.

In addition to the financial problem, modelling is fairly basic in comparison to the others although the latest 3.0 version does promise some major improvements - which include Lightwave-esque lens flares.

On the animation side it's pretty much the same story with good but not spectacular results which lack the intuitive touches offered by Caligari and to a lesser extent Real and Imagine.

Having said that, Aladdin isn't without strong points with the most notable being the generation of gases, a feature which can produce very impressive static and animated images.

However, as seems to be case throughout Aladdin, there is a compromise - which in this case takes the form of very slow rendering.

All in all, the bottom line points to a pretty good package which unfortunately suffers badly when it comes to value for money when compared to the majority of the opposition.

## Real3D v2

Although the package is easily the most powerful program around, it's very much an acquired taste, which beginners especially may not find very palatable.

If you have the $£ 400$ asking price and the six to 12 months needed to master the package, it simply outguns the opposition. The question is, do you really need that kind of power? And if so, how long will it be before the program let you apply it?

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